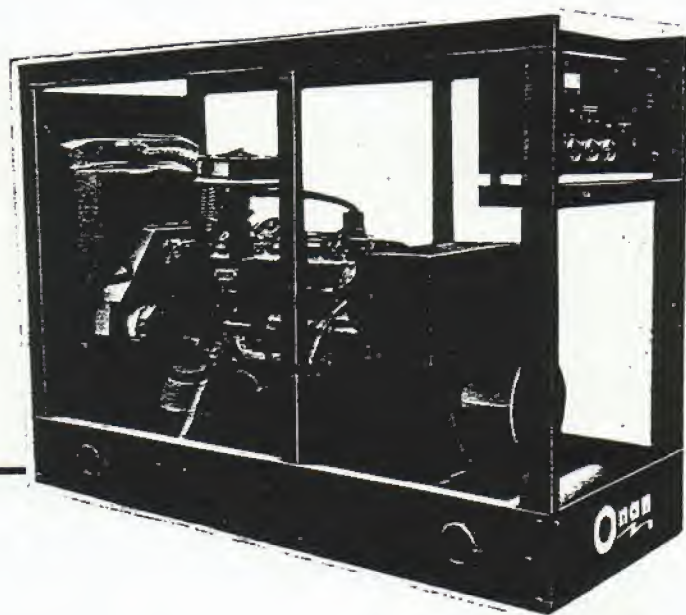

Onan

Parts Manual

SK
GenSet



946-0220
4-82 (SPEC A)

Replaces
10-78 (SPEC A)

GENERAL INFORMATION

INSTRUCTIONS FOR ORDERING REPAIR PARTS

For parts or service, contact the dealer from whom you purchased this equipment or refer to your Nearest Authorized Onan Parts and Service Center.

To avoid errors or delay in filling your parts order, please furnish all information requested.

Always refer to the nameplate on your unit.

1. Always give the MODEL, SPEC NO. and SERIAL NO.

The diagram shows a rectangular nameplate with two circular mounting holes at the top. The Onan logo is at the top left. Below it is a large rectangular box labeled 'MODEL AND SPEC NO.'. Below that is a smaller rectangular box labeled 'SERIAL NO.'. The bottom right corner of the nameplate is folded over.

M-1149

For handy reference, insert "YOUR" nameplate information in the spaces above.

2. Do not order by reference number; always use part number and description.
3. Give the part number, description and quantity needed of each item. If an older part cannot be identified, return the part prepaid to your dealer or nearest Onan Parts and Service Center. Print your name and address plainly on the package. Write a letter to the same address stating the reason for returning the part.
4. State definite shipping instructions. Any claim for loss or damage to your unit in transit should be filed promptly against the transportation company making the delivery. Shipments are complete unless the packing list indicates items are back ordered.

Prices are purposely omitted from this Parts Manual due to the confusion resulting from fluctuating costs, import duties, sales taxes, exchange rates, etc.

For current parts prices, consult your Onan Dealer, Distributor or Parts and Service Center.

"En esta lista de partes los precios se omiten de proposito, ya que bastante confusion resulto de fluctuaciones de los precios, derechos aduanales, impuestos de venta, cambios extrajeros, etc."

Consiga los precios vigentes de su distribuidor de productos "ONAN."

Important Safety Precautions

Read and observe these safety precautions when using or working on electric generators, engines and related equipment. Also read and follow the literature provided with the equipment.

Proper operation and maintenance are critical to performance and safety. Electricity, fuel, exhaust, moving parts and batteries present hazards that can cause severe personal injury or death.

FUEL, ENGINE OIL, AND FUMES ARE FLAMMABLE AND TOXIC

Fire, explosion, and personal injury can result from improper practices.

- Used engine oil, and benzene and lead, found in some gasoline, have been identified by government agencies as causing cancer or reproductive toxicity. When checking, draining or adding fuel or oil, do not ingest, breathe the fumes, or contact gasoline or used oil.
- Do not fill tanks with engine running. Do not smoke around the area. Wipe up oil or fuel spills. Do not leave rags in engine compartment or on equipment. Keep this and surrounding area clean.
- Inspect fuel system before each operation and periodically while running.
- Equip fuel supply with a positive fuel shutoff.
- Do not store or transport equipment with fuel in tank.
- Keep an ABC-rated fire extinguisher available near equipment and adjacent areas for use on all types of fires except alcohol.
- Unless provided with equipment or noted otherwise in installation manual, fuel lines must be copper or steel, secured, free of leaks and separated or shielded from electrical wiring.
- Use approved, non-conductive flexible fuel hose for fuel connections. Do not use copper tubing as a flexible connection. It will work-harden and break.

EXHAUST GAS IS DEADLY

- Engine exhaust contains carbon monoxide (CO), an odorless, invisible, poisonous gas. Learn the symptoms of CO poisoning.
- Never sleep in a vessel, vehicle, or room with a genset or engine running unless the area is equipped with an operating CO detector with an audible alarm.
- Each time the engine or genset is started, or at least every day, thoroughly inspect the exhaust system. Shut down the unit and repair leaks immediately.

- Warning: Engine exhaust is known to the State of California to cause cancer, birth defects and other reproductive harm.

Make sure exhaust is properly ventilated.

- Vessel bilge must have an operating power exhaust.
- Vehicle exhaust system must extend beyond vehicle perimeter and not near windows, doors or vents.
- Do not use engine or genset cooling air to heat an area.
- Do not operate engine/genset in enclosed area without ample fresh air ventilation.
- Expel exhaust away from enclosed, sheltered, or occupied areas.
- Make sure exhaust system components are securely fastened and not warped.

MOVING PARTS CAN CAUSE SEVERE PERSONAL INJURY OR DEATH

- Do not remove any guards or covers with the equipment running.
- Keep hands, clothing, hair, and jewelry away from moving parts.
- Before performing any maintenance, disconnect battery (negative [–] cable first) to prevent accidental starting.
- Make sure fasteners and joints are secure. Tighten supports and clamps, keep guards in position over fans, drive belts, etc.
- If adjustments must be made while equipment is running, use extreme caution around hot manifolds and moving parts, etc. Wear safety glasses and protective clothing.

BATTERY GAS IS EXPLOSIVE

- Wear safety glasses and do not smoke while servicing batteries.
- Always disconnect battery negative (–) lead first and reconnect it last. Make sure you connect battery correctly. A direct short across battery terminals can cause an explosion. Do not smoke while servicing batteries. Hydrogen gas given off during charging is explosive.
- Do not disconnect or connect battery cables if fuel vapors are present. Ventilate the area thoroughly.

DO NOT OPERATE IN FLAMMABLE AND EXPLOSIVE ENVIRONMENTS

Flammable vapor can be ignited by equipment operation or cause a diesel engine to overspeed and become difficult to stop, resulting in possible fire, explosion, severe personal injury and death. **Do not operate diesel equipment where a flammable vapor environment can be created by fuel spill, leak, etc., unless equipped with an automatic safety device to block the air intake and stop the engine.**

HOT COOLANT CAN CAUSE SEVERE PERSONAL INJURY

- Hot coolant is under pressure. Do not loosen the coolant pressure cap while the engine is hot. Let the engine cool before opening the pressure cap.

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH

- Do not service control panel or engine with unit running. High voltages are present. Work that must be done while unit is running should be done only by qualified service personnel.
- Do not connect the generator set to the public utility or to any other electrical power system. Electrocution can occur at a remote site where line or equipment repairs are being made. An approved transfer switch must be used if more than one power source is connected.
- Disconnect starting battery (negative [-] cable first) before removing protective shields or touching electrical equipment. Use insulative mats placed on dry wood platforms. Do not wear jewelry, damp clothing or allow skin surface to be damp when handling electrical equipment.
- Use insulated tools. Do not tamper with interlocks.
- Follow all applicable state and local electrical codes. Have all electrical installations performed by a qualified licensed electrician. Tag open switches to avoid accidental closure.
- With transfer switches, keep cabinet closed and locked. Only authorized personnel should have cabinet or operational keys. Due to serious shock hazard from high voltages within cabinet, all service and adjustments must be performed by an electrician or authorized service representative.

If the cabinet must be opened for any reason:

1. Move genset operation switch or Stop/Auto/Handcrank switch (whichever applies) to Stop.
2. Disconnect genset batteries (negative [-] lead first).
3. Remove AC power to automatic transfer switch. If instructions require otherwise, use extreme caution due to shock hazard.

MEDIUM VOLTAGE GENERATOR SETS (601V TO 15kV)

- Medium voltage acts differently than low voltage. Special equipment and training are required to work on or around medium voltage equipment. Operation and maintenance must be done only by persons trained and qualified to work on such devices. Improper use or procedures will result in severe personal injury or death.
- Do not work on energized equipment. Unauthorized personnel must not be permitted near energized equipment. Induced voltage remains even after equipment is disconnected from the power source. Plan maintenance with authorized personnel so equipment can be de-energized and safely grounded.

GENERAL SAFETY PRECAUTIONS

- Do not work on equipment when mentally or physically fatigued or after consuming alcohol or drugs.
- Carefully follow all applicable local, state and federal codes.
- Never step on equipment (as when entering or leaving the engine compartment). It can stress and break unit components, possibly resulting in dangerous operating conditions from leaking fuel, leaking exhaust fumes, etc.
- Keep equipment and area clean. Oil, grease, dirt, or stowed gear can cause fire or damage equipment by restricting airflow.
- Equipment owners and operators are solely responsible for operating equipment safely. Contact your authorized Onan/Cummins dealer or distributor for more information.

KEEP THIS DOCUMENT NEAR EQUIPMENT FOR EASY REFERENCE.

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This parts catalog applies to the standard generator sets listed below. Any engine parts modified or added by Onan will be listed in this catalog and have been assigned Onan part numbers for identification. These modified or added parts supersede similar parts listed in the Engine Manufacturer's manuals. The illustrations are arranged in groups of related items, and each part or assembly is identified by a reference number. All parts illustrated are typical, and unless otherwise mentioned, parts are interchangeable. These typical illustrations are subject to change and reflect only the latest replacement parts arrangement. The Right and Left generator set sides are determined by facing the front end of the engine.

SET DATA TABLE

MODEL IDENTIFICATION	RATING	MODEL IDENTIFICATION	RATING
25.0SK-*/#£	25,000 WATTS	30.0SK-*/#£	30,000 WATTS

ELECTRICAL DATA TABLE

*VOLTAGE CODES	VOLTS	HERTZ	WIRE	PHASE	NOTES
3	120/240	60	13	1	
9X	347/600	60	4	3	
15	120/240	60	12	1	+
15	120/208, 120/240, 127/220, 139/240, 240/416, 254/440, 277/480	60	12	3	+
53	110/220, 115/230, 120/240	50	3	1	
515	110/220, 115/230	50	12	1	+
515	110/190, 110/220, 115/200, 115/230, 120/208, 127/220, 220/380, 230/400, 240/416, 254/440	50	12	3	+
3CR50	@	60	3	1	@
15R50	@	60	12	1	@+
15R50	@	60	12	3	@+

- * - Voltage codes follow model letter designations.
- # - Specification number; number 1 is standard, all others indicate variations.
- £ - Specification letter; letter advances (A to B, B to C, etc.) with major manufacturing changes.
- +
- These generators are reconnectable, refer to Operator's manual for wiring data.
- @ - These are Penn State Sets; special parts are identified in the Parts manual when applicable.

NOTICE!

ITEMS REFERENCED AS **OPTIONAL** INDICATE PART IS FACTORY INSTALLED AND MAY NOT BE APPLICABLE TO ALL MODELS. FOR FIELD CONVERSIONS ADDITIONAL PARTS ARE USUALLY REQUIRED.

REPLACEMENT ENGINE

ONAN PART NO.

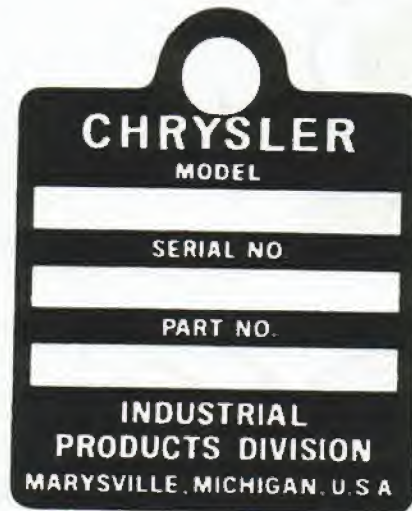
100-1524

***Engine, Replacement** Standard

Includes: Complete Cylinder Block, Oil Pan, Water Pump, Oil Filter, Spark Plugs, Thermostat, and Alternator Mounting Brackets.

Excludes: Carburetor, Air Cleaner, Generator, Oil Pressure, Water Temperature Gauge Senders, Oil Pressure Switch, High Water Temperature Cut Off Switch, Radiator, Fan Blades & Belts, Muffler, Exhaust Tube, Fly Wheel, Fuel Pump and Starter.

***NOTE:** Engine listed is for Standard Spec 1 (Radiator Cooled) generator sets, for all other models refer to the factory.



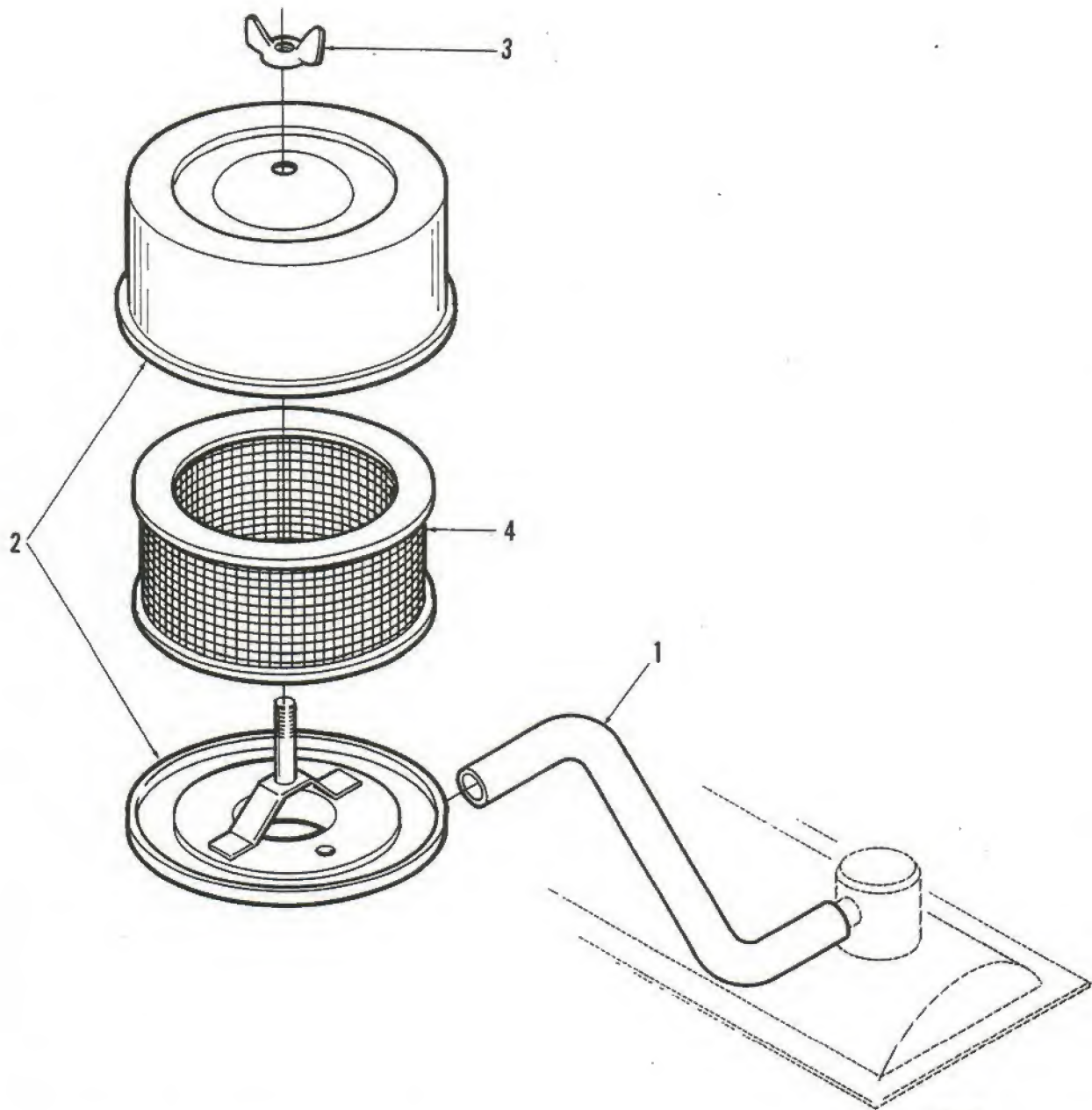
M1400

For handy reference, insert "YOUR" nameplate information in the spaces.

ENGINE REPLACEMENT PARTS

All engine replacement parts must be ordered from the engine manufacturer, except those modified or added by Onan. When ordering engine parts, refer to the manufacturer's nameplate and supply the Model, Spec, Serial numbers and other available information. Refer to the engine manufacturer's manuals for your nearest authorized distributor or parts center; or contact the Onan distributor from whom you purchased this set for assistance in ordering replacement parts.

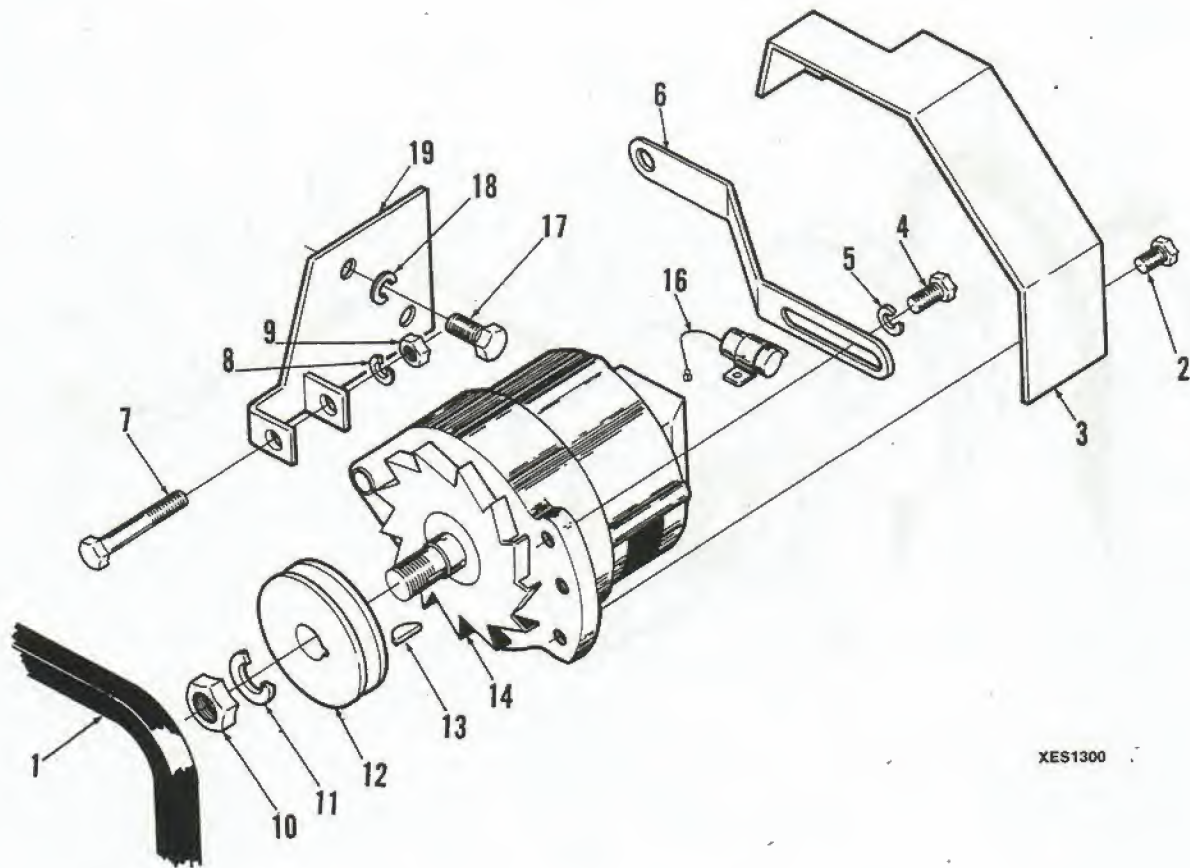
AIR CLEANER



FS1416

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0891	1	Hose, Rubber - Breather (5/8" ID x 14" Lg)
2	140-1583	1	Air Cleaner (Includes Nut and Element)
3	865-0020	1	Nut, Wing (1/4-20)
4	140-1089	1	Element, Air Cleaner

ALTERNATOR



XES1300

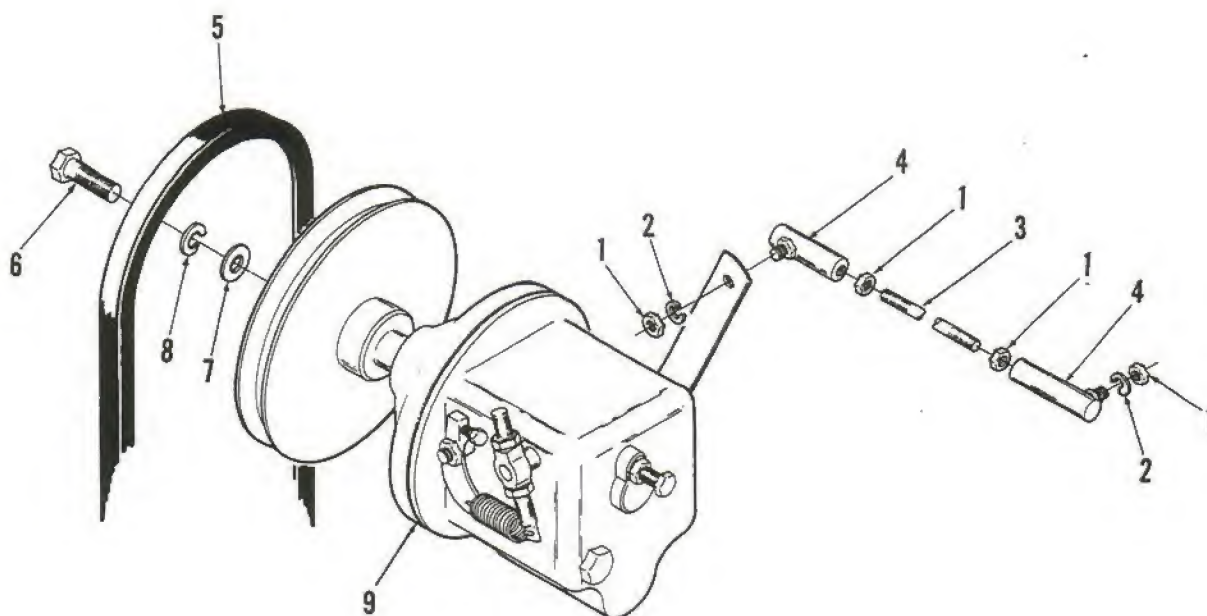
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	511-0072	1	Belt, Drive
2	821-0014	1	Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2")
3	191-1240	1	Guard, Belt
4	800-0026	1	Screw, Cap - Hex Head (5/16-18 x 3/4")
5	850-0045	1	Washer, Lock - Spring (5/16")
6	191-1224	1	Arm, Adjusting - Alternator
7	800-0085	1	Screw, Cap - Hex Head (1/2-13 x 2-1/4")
8	850-0060	2	Washer, Lock - Spring (1/2")
9	862-0016	2	Nut, Hex (1/2-13)
10	868-0007	1	#Nut, Hex (5/8-18NF-2A)
11	850-0070	1	#Washer, Lock - Spring (5/8")
12	191-0623	1	Pulley

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
13	515-0093	1	#Key, Woodruff (#5)
14	191-1388	1	Alternator - 12 VDC (A Replacement Kit, Includes Part Marked *)
15	191-1390	1	#Regulator, Voltage (A Replacement Kit, Includes Part Marked *)
16	312-0201	1	*Capacitor
17	800-0071	2	Screw, Cap - Hex Head (7/16-14 x 1")
18	850-0055	2	Washer, Lock - Spring (7/16")
19	191-1212	1	Bracket, Mounting - Alternator

- Parts Included in Alternator.

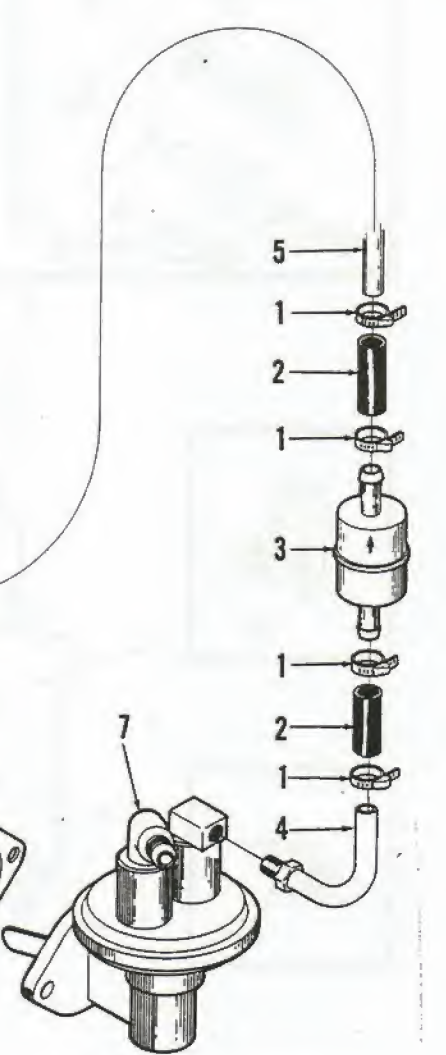
* - Part Included in Replacement Kits.

GOVERNOR



XM1391

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	115-0025	4	Nut, Hex (1/4-28)
2	850-0040	2	Washer, Lock - Spring (1/4")
3	520-0874	1	Stud (Governor to Throttle)
4	150-0638	2	Joint, Ball
5	511-0066	1	Belt, Drive
6	800-0051	3	Screw, Cap - Hex Head (3/8-16 x 1-1/4")
7	526-0014	3	Washer, Flat (25/64" ID x 1" OD x 1/16" Thk)
8	850-0050	3	Washer, Lock - Spring (3/8")
9	150-0440	1	Governor

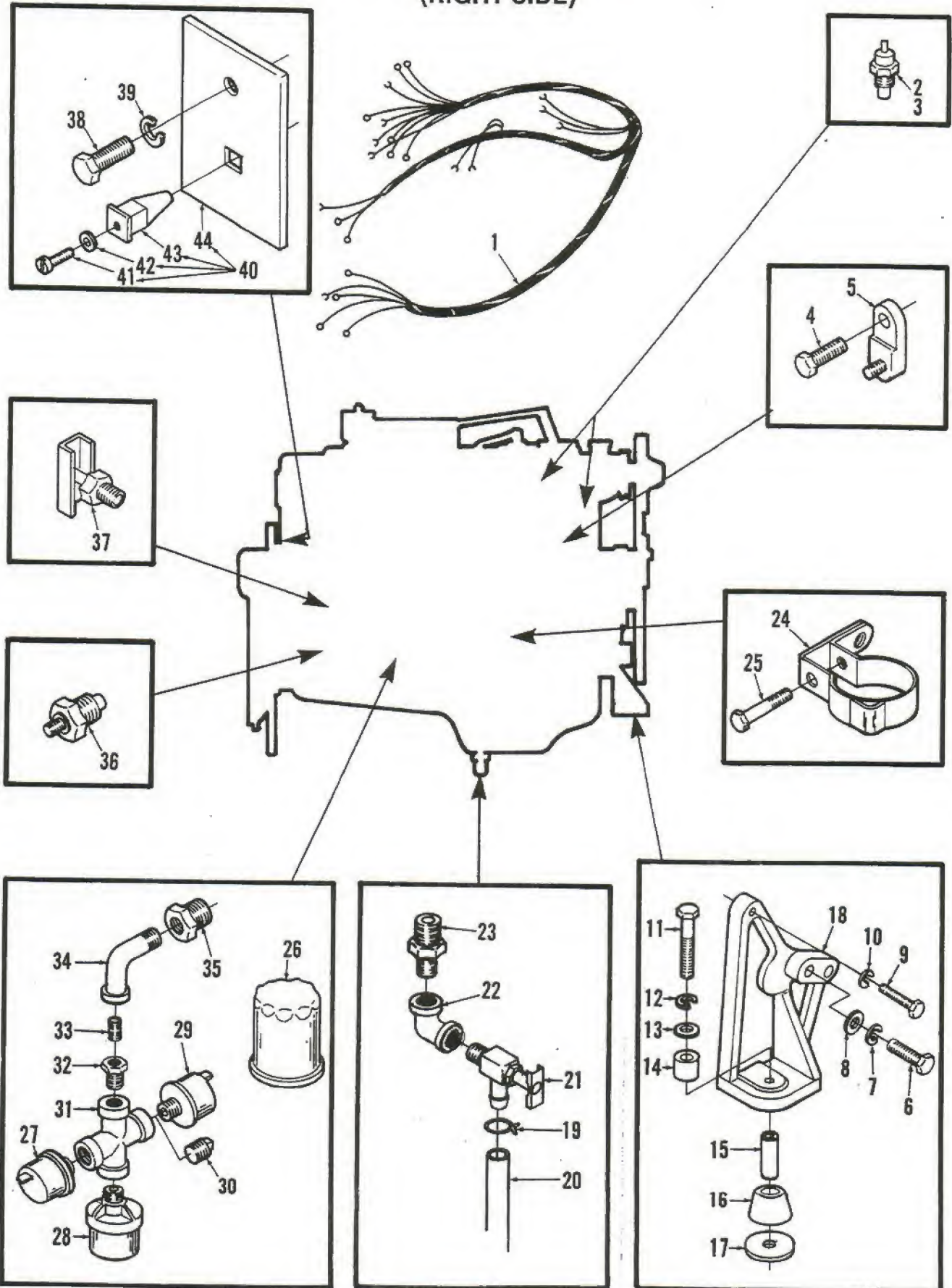


XFS1421

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0685	4	Clamp, Hose
2	503-0883	2	Hose, Rubber (5/16" ID x 2" Lg)
3	149-1569	1	Filter, Fuel
4	149-1573	1	Line, Fuel
5	149-1558	1	Line, Fuel
6	502-0004	1	Elbow, Pipe - 90 DEG, Brass
7	149-1568	1	Pump, Fuel
8	149-0736	1	Gasket - Fuel Pump
9	307-2017	1	Solenoid - 12 VDC (Choke Closing)
10	307-2014	1	Plate, Mounting - Solenoid
11	104-0091	2	Nut, Hex (3/8-24)
12	850-0050	2	Washer, Lock - Spring (3/8")
13	520-0311	2	Stud (3/8-24 x 3/8-16 x 1-5/8" Lg)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
14	141-0854	1	Carburetor, Gasoline (Includes Fuel Shutoff Solenoid)
15	141-0850	1	Solenoid - 12 VDC (Fuel Shutoff)
16	154-0133	1	Gasket - Carburetor
17	503-0871	1	Hose, Rubber (5/16" ID x 13-1/2" Lg)
18	502-0582	1 -	Adapter, Hose (1/8-27 NPT x 5/16" Hose)
19	814-0200	2	Screw, Machine - Flat Head (3/8-16 x 1-1/4")
20	148-0800	1	Adapter - Carburetor to Manifold
21	148-0775	1	Gasket

MISCELLANEOUS ENGINE PARTS (RIGHT SIDE)

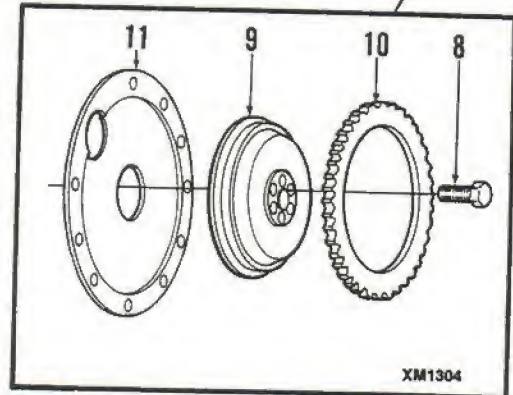
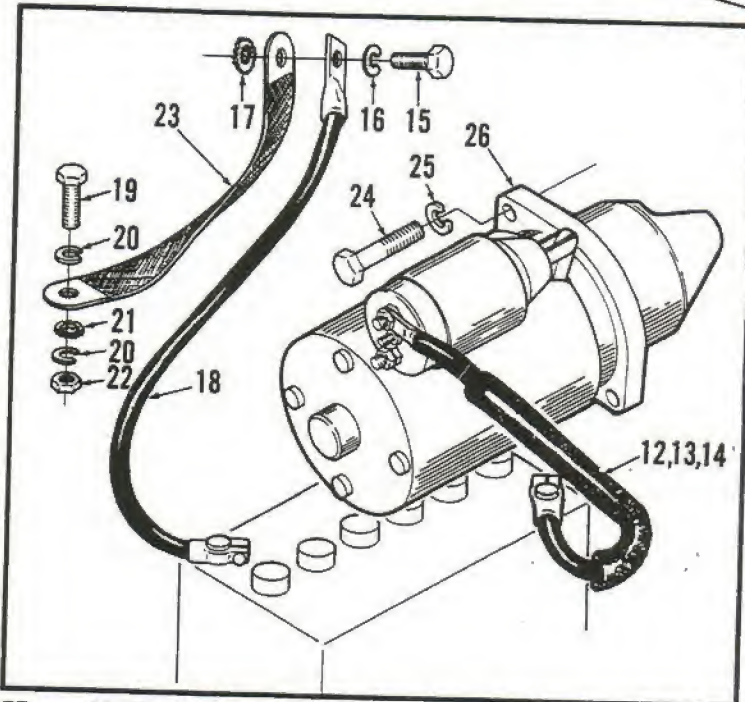
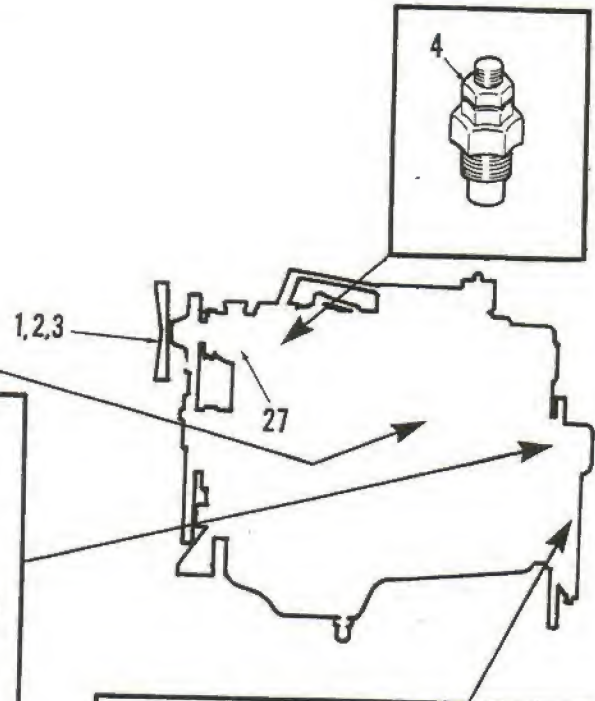
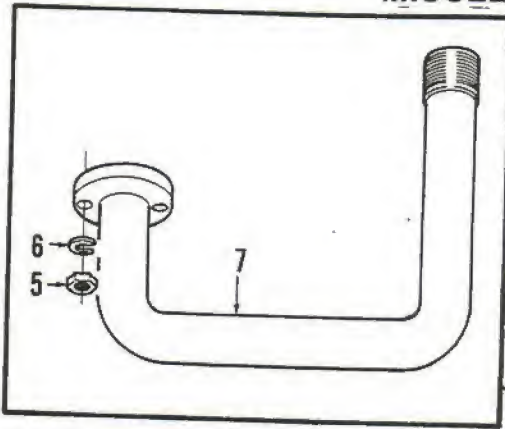


MISCELLANEOUS ENGINE PARTS (RIGHT SIDE)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
WIRING HARNESS - ENGINE				21	504-0092	1	Valve, Shutoff
1	338-1130	1	Standard	22	505-0039	1	Elbow, Pipe - 90 DEG (3/8 NPT)
		1	Special (NOTE: Use Standard Wiring Harness and add electrical leads as required for optional sensors, switches per Gen Set wiring diagram.)	23	102-0652	1	Adapter, Hex (1/2-20 UNF x 3/8-18 NPT)
2	309-0179	1	+Switch, Thermostatic - High Coolant Temperature - PreAlarm	24	160-1045	1	Clamp, Mounting - Ignition Coil
3	309-0178	1	+Switch, Thermostatic - High Coolant Temperature - Shutdown	25	166-0286	1	Screw, Special - Coil Clamp
4	821-0029	1	Screw, Self-locking - Hex Washer Head (3/8-16 x 3/4")	26	122-0193	1	Filter, Oil
5	309-0269	1	+Switch, Thermostatic - Low Engine Temperature	27	193-0244	1	+Sender, Pressure - Oil
6	800-0050	2	Screw, Cap - Hex Head (3/8-16 x 1")	28	309-0169	1	+Switch, Pressure - Oil (Pre-Alarm)
7	850-0050	2	Washer, Lock - Spring (3/8")	29	309-0064	1	+Switch, Pressure - Oil (Shutdown)
8	526-0013	2	Washer, Flat (29/64" ID x 1" OD x 1/16" Thk)	30	505-0057	1	Plug, Pipe - Square Head (1/8 NPT)
9	800-0036	3	Screw, Cap - Hex Head (5/16-18 x 2-3/4")	31	505-0763	1	Cross, Pipe (1/8" NPT)
10	850-0045	3	Washer, Lock - Spring (5/16")	32	505-0007	1	Bushing, Reducer - Hex (1/4 NPT x 1/8 NPT)
11	800-0082	1	Screw, Cap - Hex Head (7/16-14 x 3-3/4")	33	505-0098	1	Nipple, Pipe - Close (1/8" NPT x 3/4")
12	850-0055	1	Washer, Lock - Spring (7/16")	34	505-0011	1	Elbow, Pipe - Street, 90 DEG (1/4 NPT)
13	526-0014	1	Washer, Flat (25/64" ID x 1-1/2" OD x 1/8" Thk)	35	505-0017	1	Bushing, Reducer - Hex (3/8 NPT x 1/4 NPT)
14	402-0282	1	Snubber, Rubber	36	193-0249	1	+Sender, Temperature - Oil
15	402-0290	1	Bushing, Sleeve	37	504-0003	1	Cock, Drain (1/4 NPT)
16	402-0287	1	Mount, Vibration - Engine	38	800-0050	1	Screw, Cap - Hex Head (3/8-16 x 1")
17	526-0182	3	Washer, Flat (17/32" ID x 2-7/8" OD x 1/4" Lg)	39	850-0050	1	Washer, Lock - Spring (3/8")
18	403-1323	1	Support, Mounting - Engine	40	332-1292	1	Terminal Board (Includes Parts Marked *)
19	503-0131	1	Clamp, Hose	41	809-0035	1	*Screw, Thread Cutting - Round Head (#8 x 3/4")
20	503-0262	1	Hose, Rubber (5/8" ID x 7/8" OD x 18" Lg)	42	508-0015	1	*Washer, Insulating - Fiber (#8)
				43	870-0196	1	*Nut, Insulating (#8)
				44	332-1281	1	*Plate, Mounting - Terminal

* - Items used with fault lights or gauges on Control Panel.
* - Parts included in Terminal Board.

MISCELLANEOUS ENGINE PARTS (LEFT SIDE)

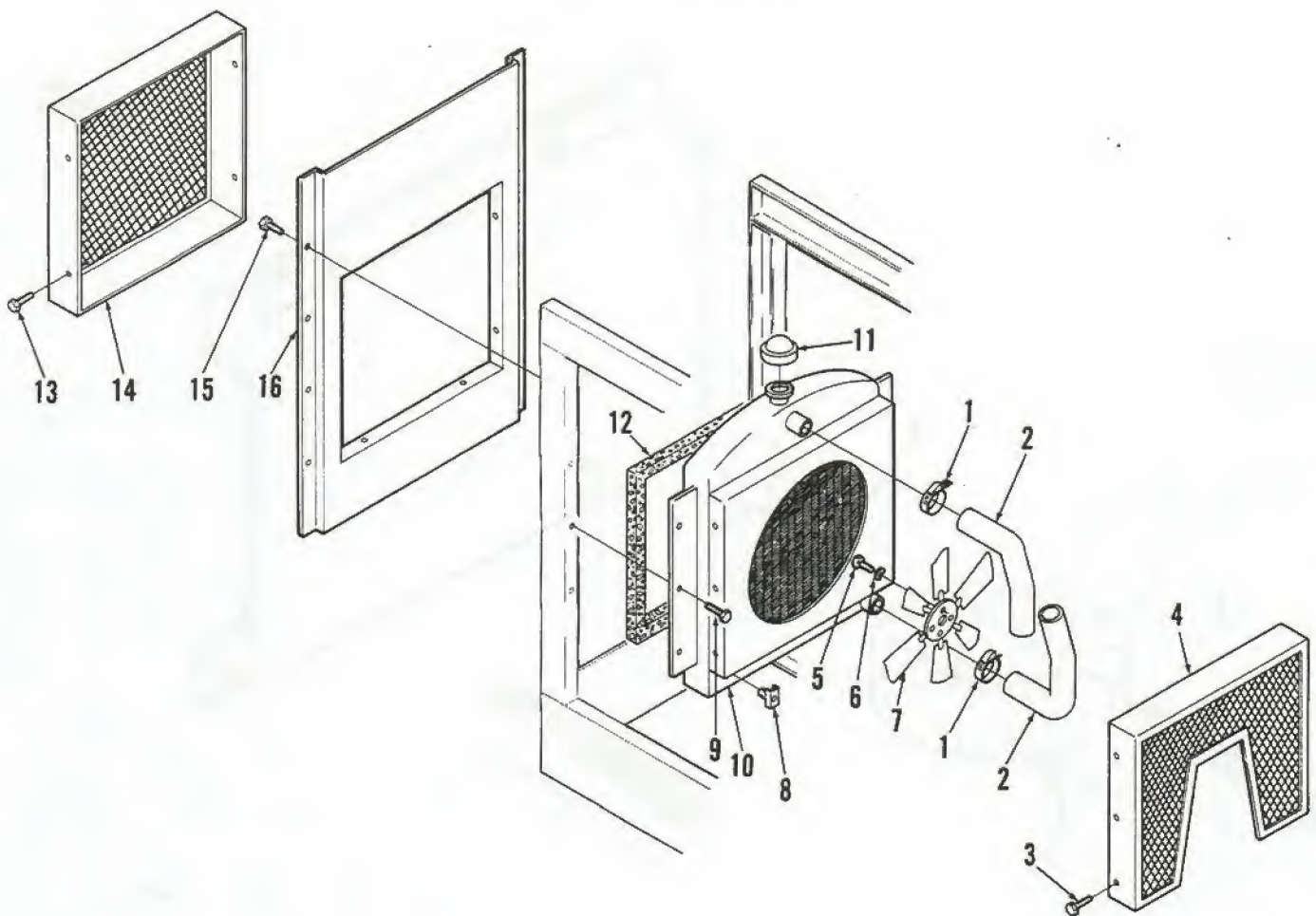


REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	511-0076	1	Belt, Drive - Water Pump
2	511-0072	1	Belt, Drive - Fan/Alternator
3	ATTACHING HARDWARE FOR Fan, Fan Pulley and Water Pump Pulley		
	800-0026	9	Screw, Cap - Hex Head (5/16-18 x 3/4")
	850-0045	9	Washer, Lock - Spring (5/16")
4	193-0259	1	+Sender, Temperature - Engine Coolant
5	862-0004	2	Nut, Hex (7/16-14)
6	850-0055	2	Washer, Lock - Spring (7/16")
7	155-1584	1	Tube, Exhaust
8	805-0028	6	Bolt, Place
9	104-1034	1	Flywheel with Ring Gear
10	104-0980	1	Gear, Ring
11	231-0211	1	Plate, Adapter - Generator Mtg.
	ATTACHING HARDWARE FOR ADAPTER PLATE		
	800-0050	2	Screw, Cap - Hex Head (3/8-16 x 1")
	800-0075	3	Screw, Cap - Hex Head (7/16-14 x 2")
	850-0050	2	Washer, Lock - Spring (3/8")
	850-0055	3	Washer, Lock - Spring (7/16")
	862-0004	3	Nut, Hex (7/16-14)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
12	332-0942	2	Tie, Cable
13	895-0179	1	Tubing, Asbestos
14	416-0643	1	Cable, Battery - Positive
15	800-0071	1	Screw, Cap - Hex Head (7/16-14 x 1")
16	850-0055	1	Washer, Lock - Spring (7/16")
17	856-0012	1	Washer, Lock - EIT (7/16")
18	416-0049	1	Cable, Battery - Negative
19	800-0090	1	Screw, Cap - Hex Head (1/2-13 x 1")
20	850-0060	2	Washer, Lock - Spring (1/2")
21	856-0013	1	Washer, Lock - EIT (1/2")
22	862-0016	1	Nut, Hex (1/2-13)
23	337-0090	1	Strap, Electrical
24	800-0071	2	Screw, Cap - Hex Head (7/16-14 x 1")
25	850-0055	2	Washer, Lock - Spring (7/16")
26	191-1209	1	Starter - 12 VDC
27	ATTACHING HARDWARE FOR THERMOSTAT HOUSING		
	800-0050	2	Screw, Cap - Hex Head (3/8-16 x 1")
	850-0050	4	Washer, Lock - Spring (3/8")
	800-0055	2	Screw, Cap - Hex Head (3/8-16 x 2-1/4")

+ - Items used with fault lights or gauges on Control Panel.

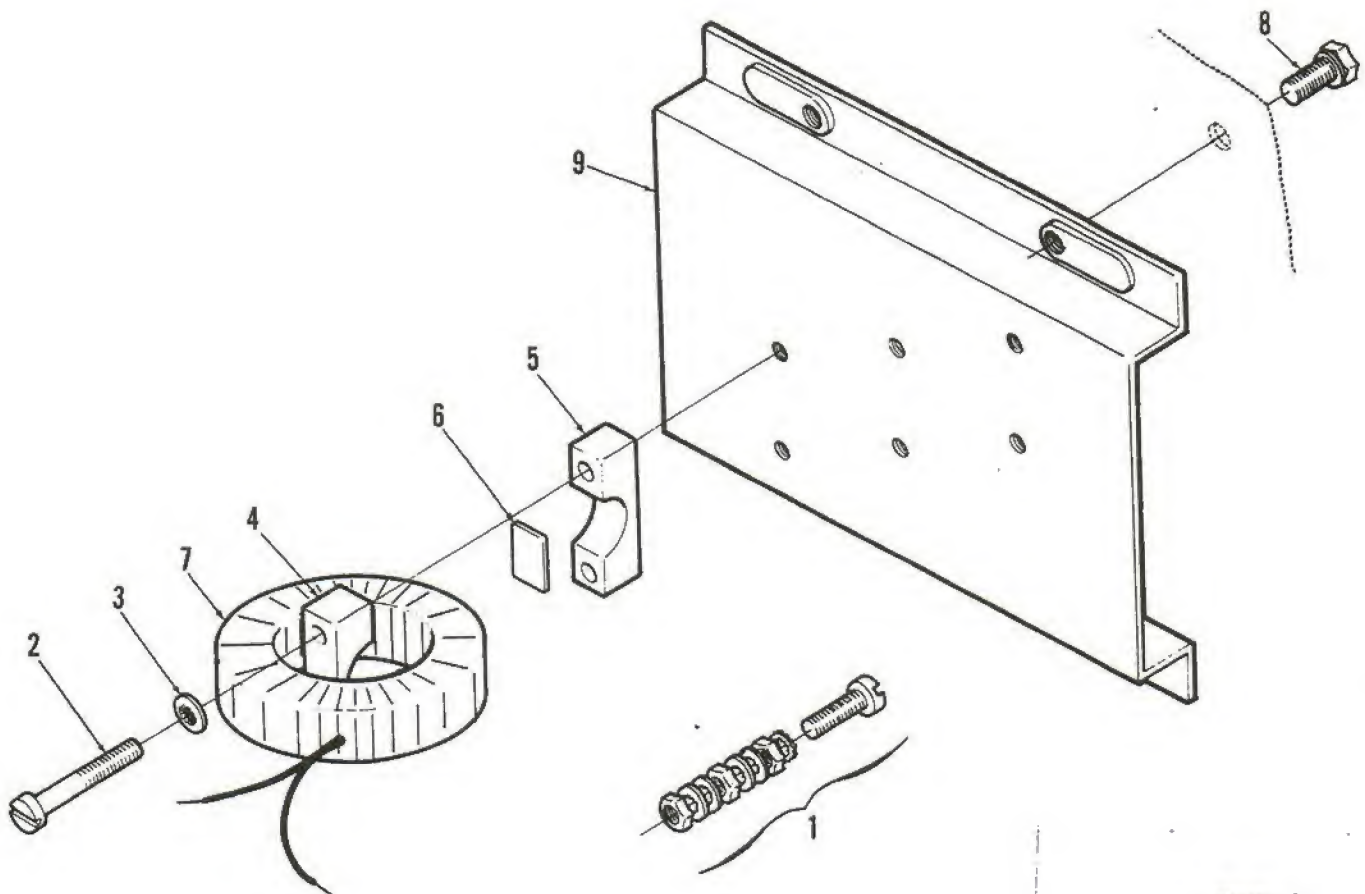
COOLING SYSTEM (WITH RADIATOR)



XCS1197

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0429	4	Clamp, Hose
2	503-0869	2	Hose, Rubber - Preformed
3	821-0005	8	Screw, Self-locking - Hex Washer Head (#10-32 x 1/2")
4	130-1275	1	Guard, Fan
5	800-0033	4	Screw, Cap - Hex Head (5/16-18 x 2")
6	850-0045	4	Washer, Lock - Spring (5/16")
7	130-1196	1	Fan
8	504-0028	1	Cock, Drain (3/8" NPT)
9	821-0010	6	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")
10	130-1238	1	Radiator (Includes Cap)
11	130-1363	1	Cap, Radiator
12	895-0174	1	Strip, Foam - Rubber
13	821-0008	8	Screw, Self-locking - Hex Washer Head (1/4-20 x 5/16")
14	130-1262	1	Guard - Radiator Core
15	821-0010	8	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")
16	130-1264	1	Panel, Front-Air Duct

CURRENT TRANSFORMER ASSEMBLY

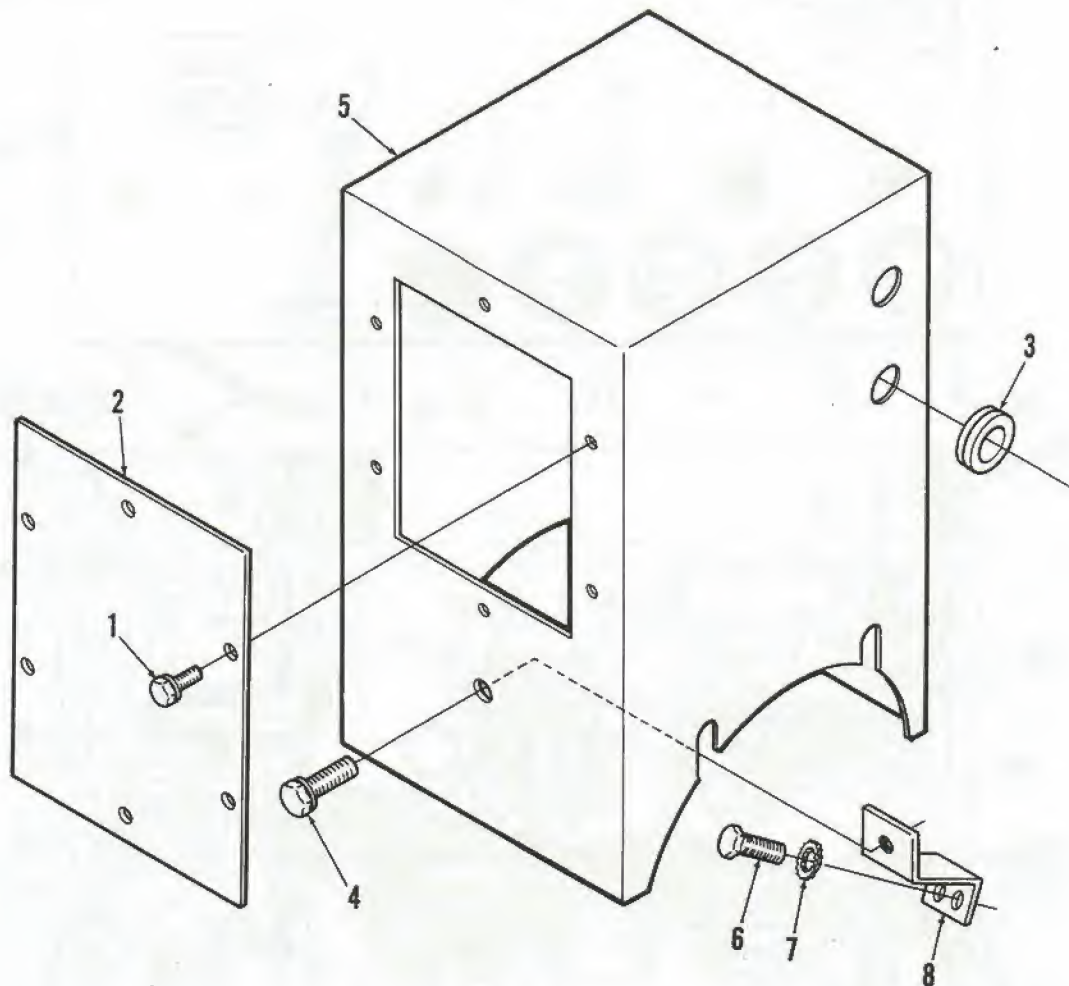


ES1310

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
	CURRENT TRANSFORMER ASSEMBLY (Select Components as Required)		
1	GROUND TERMINAL ASSEMBLY (Includes Following Items)		
	815-0203	1	Screw, Machine - Round Head, Brass (#10-32 x 7/8")
	871-0010	3	Nut, Hex - Brass (#10-32)
	856-0003	1	Washer, Lock - EIT (#10)
	854-0010	2	Washer, Lock - IT (#10)
	526-0049	2	Washer, Flat - Brass (13/64" ID x 7/32" OD x 1/32" Thk)
2	813-0110	6	Screw, Machine - Round Head (#10-32 x 2")

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
3	854-0010	6	Washer, Lock - IT (#10)
4	302-0235	3	Clamp, Upper
5	302-0236	3	Clamp, Lower
6	302-0253	6	Shim
7	CURRENT TRANSFORMER (Select Size As Required)		
	302-0117	3	Ratio 50/5, 3 VA
	302-0076	3	Ratio 75/5, 2 VA
	302-0078	3	Ratio 100/5, 2 VA
	302-0079	3	Ratio 150/5, 1 VA
	302-0106	3	Ratio 200/5, 1 VA
	302-0209	3	Ratio 230/5, 1 VA
	302-0107	3	Ratio 300/5, 1 VA
8	821-0010	4	Screw Self-locking - Hex Washer Head (1/4-20 x 1/2")
9	301-4610	1	Bracket, Mounting - Transformer

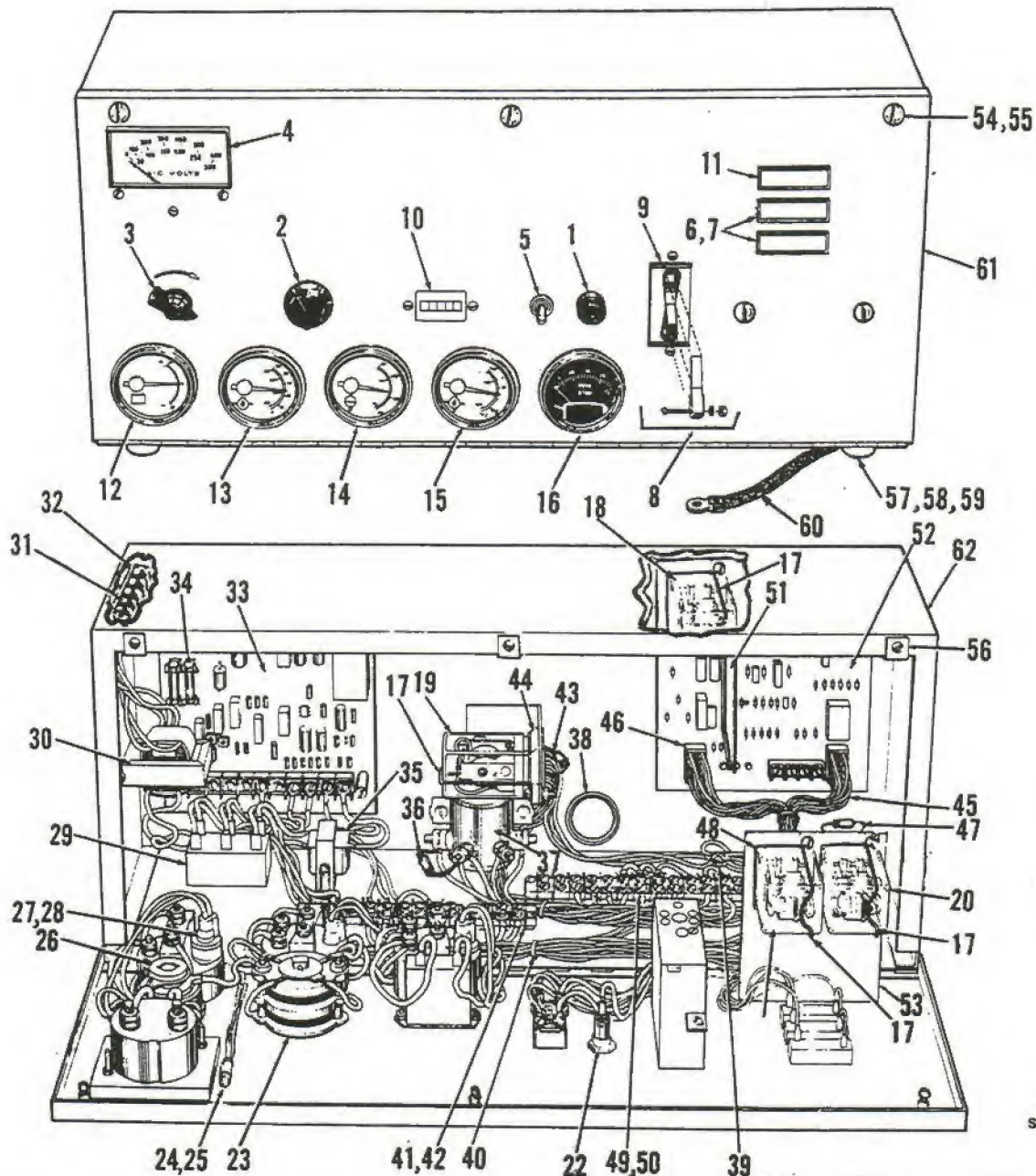
OUTPUT BOX ASSEMBLY



XES1311

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	821-0010	12	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")
2	301-4640	2	Cover, Access
3	508-0109	2	Grommet, Rubber
4	821-0014	2	Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2")
5	301-4608	1	Output Box
6	815-0236	4	Screw, Tapping - Hex Head (5/16-18 x 5/8")
7	856-1008	4	Washer, Lock - EIT (5/16")
8	301-3903	2	Bracket, Support - Control Box

SET CONTROL WITH SINGLE FAULT LIGHT



SC1316

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	321-0147	1	Fuse, Cartridge (5 AMP)
2	303-0076	1	Knob, Pointer
3	303-0032	1	Knob
4	VOLTMETER		
			SINGLE SCALE
	302-1175	1	0-300 Volt, Code 3, 53
	302-1300	1	0-750 Volt, Code 9X
			DUAL SCALE
	302-1148	1	0-300, 0-600 Volt, Code 15, 515
5	SWITCH, TOGGLE - SELECTOR (S15)		
	308-0138	1	SPDT-3 Position
	308-0327	1	SPDT (Penn State Sets)
6	±LIGHT, INDICATOR - 125 VAC (Lens Color & Legend Listed Below)		
	322-0130	1	Red - Lower Scale
	322-0131	1	Red - Upper Scale
7	322-0178	1	±Light Indicator - 125 VAC (Amber Lens - No Legend)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
8	320-0307	1	Lock - Circuit Breaker Handle (Penn State Sets)
	ATTACHING HARDWARE FOR LOCK		
	815-0203	1	Screw, Machine - Round Head (#10-32 x 7/8")
	854-0010	1	Washer, Lock - IT (#10)
	871-0010	1	Nut, Hex (#10-32)
9	320-0431	1	Circuit Breaker
	ATTACHING HARDWARE FOR CIRCUIT BREAKER		
	812-0061	2	Screw, Machine - Round Head (#6-32 x 3/8")
	850-0020	2	Washer, Lock - Spring (#6)
	815-0203	1	Screw, Machine - Round Head, Brass (#10-32 x 7/8")
	871-0010	1	Nut, Hex - Brass (#10-32)
	853-0008	1	Washer, Lock - ET (#10)
	526-0049	1	Washer, Flat - Brass (13/64" ID x 7/16" OD x 132" Thk)

SET CONTROL WITH SINGLE FAULT LIGHT

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
10	302-0885	1	Meter, Time Totalizing
11	322-0128	1	Light, Indicator - 14 VDC (Red-Fault)
12	302-1154	1	Ammeter (30-0-30)
13	193-0243	1	Gauge, Oil Pressure (0-100 PSI)
14	193-0245	1	Gauge, Water Temperature (100-280 F)
15	193-0248	1	Gauge, Oil Temperature (150-350 F)
16	302-0726	1	Tachometer
17	307-1157	4	Spring, Holddown - Relay
18	307-1633	1	Relay - 12 VDC (K11)
19	307-1061	1	Relay - 240 VAC (K21)
20	307-1058	1	Relay - 12 VDC (K12)
21	307-1061	1	Relay - 240 VAC (K14)
22	321-0217	1	Holder, Fuse
23	308-0012	1	Switch, Rotary - Selector (S21)
24	322-0203	1	Lamp, Incandescent (14 VDC, .3 CP, T-1-3/4)
25	322-0213	1	Lampholder
	ATTACHING HARDWARE FOR LAMPHOLDER		
	812-0029	1	Screw, Machine - Round Head (#4-40 x 3/8")
	853-0001	1	Washer, Lock - ET (#4)
	860-0003	1	Nut, Hex (#4-40)
26	303-0170	1	Rheostat - 35K Ohm, 25 Watt (R21)
27	322-0004	4	Lamp, Incandescent (14 VDC, 1.4 CP, T-3-1/4)
28	322-0210	4	Lampholder (Fits Gauges)
29	305-0675	1	Rectifier, Bridge
	ATTACHING PARTS FOR RECTIFIER		
	812-0070	2	Screw, Machine - Round Head (#6-32 x 1-1/4")
	850-0020	2	Washer, Lock - Spring (#6)
30	315-0431	1	Transformer, Voltage
	ATTACHING PARTS FOR TRANSFORMER		
	812-0061	2	Screw, Machine - Round Head (#6-32 x 3/8")
	853-0003	2	Washer, Lock - ET (#6)
31	332-0604	1	Block, Terminal - TB22 (5 Place)
32	332-2116	1	Strip, Marker (H2 through H6)
33	332-1956	1	Regulator, Voltage (Includes Fuses)
34	321-0204	2	Fuse, Cartridge (1/4 Amp)
35	315-0384	1	Reactor
	ATTACHING PARTS FOR REACTOR		
	812-0061	2	Screw, Machine - Round Head (#6-32 x 3/8")
	853-0003	2	Washer, Lock - ET (#6)
36	357-0026	1	Diode with Terminals
37	307-1500	1	Relay, Solenoid (K13)
38	508-0001	4	Grommet
39	GROUND TERMINAL ASSEMBLY (Includes Parts Marked *)		
	871-0010	2	#Nut, Hex - Brass (#10-32)
	850-0030	1	#Washer, Lock - Spring (#10)
	526-0062	2	#Washer, Flat - Brass (13/64" ID x 1/2" OD x 1/16" Thk)
	853-0008	1	#Washer, Lock - ET (#10)
	856-0003	1	#Washer, Lock - EIT (#10)
	815-0203	1	#Screw, Machine - Round Head, Brass (#10-32 x 7/8")

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
40	HARNESSES, WIRING - AC CONTROL (Includes Parts Marked *)		
	338-1164	1	Code 15, 515
	338-1248	1	Code 3, 53
	338-1637	1	Code 9X
41	*BLOCK TERMINAL (TB21)		
	332-0607	1	12 Place (Code 15, 515)
	332-2025	1	7 Place (Codes 3, 53, 9X)
42	STRIP, MARKER		
	332-2115	1	#61 Through 71 (Code 15, 515)
	332-2237	1	#61 Through 67 (Codes 3, 53, 9X)
43	350-1201	1	*Resistor With Terminals (Code 15, 515)
44	323-0765	1	*Socket, Relay (Code 15, 515)
45	338-1163	1	Harness, Wiring - Engine Control (Includes Parts Marked †)
46	323-0984	2	†Connector, Plug (12 Pin)
47	357-0040	1	†Diode With Terminals & Leads
48	323-0765	2	†Socket, Relay
49	332-1005	1	†Block, Terminal (20 Place)
50	332-1559	1	Strip, Marker - #21 Through 40
51	300-1604	1	Control, Cycle Cranker (Optional)
52	300-1695	1	Control, Engine Monitor
53	301-4665	1	Bracket, Relay Mounting
	ATTACHING HARDWARE FOR BRACKET		
	812-0063	2	Screw, Machine - Round Head (#6/32 x 1/2")
	856-0001	2	Washer, Lock - EIT (#6)
	860-0006	2	Nut, Hex (#6-32)
54	406-0334	3	Clip, Retaining - Turnbutton Fastener
55	406-0333	3	Stud, Turnbutton Fastener
56	406-0332	3	Receptacle, Turnbutton Fastener
57	800-0045	4	Screw, Cap - Hex Head (5/16-18 x 3/8")
58	850-0045	4	Washer, Lock - Spring (5/16")
59	402-0070	4	Dampener, Vibration
60	337-0049	1	Strap, Ground
	ATTACHING PARTS FOR STRAP		
	800-0045	1	Screw, Cap - Hex Head (5/16-18 x 3/8")
	850-0045	1	Washer, Lock - Spring (5/16")
	856-0008	2	Washer, Lock - EIT (5/16")
	862-0015	1	Nut, Hex (5/16-18)
61	PANEL, CONTROL - WITH HINGE & FLOOR PLATE		
	CODE 3, 53		
	301-5703	1	With Three Gauge Mtg. Holes
	£	1	With Four Gauge Mtg. Holes
	£	1	With Five Gauge Mtg. Holes
	CODE 9X		
	301-7222	1	With Three Gauge Mtg. Holes
	£	1	With Four Gauge Mtg. Holes
	£	1	With Five Gauge Mtg. Holes
	CODE 15, 515		
	301-5339	1	With Three Gauge Mtg. Holes
	301-5440	1	With Four Gauge Mtg. Holes
	£	1	With Five Gauge Mtg. Holes
62	BOX, CONTROL		
	301-4655	1	Codes 3, 53, 15, 515
	301-5350	1	Code 9X

* - Parts Included in AC Control Wiring Harness.

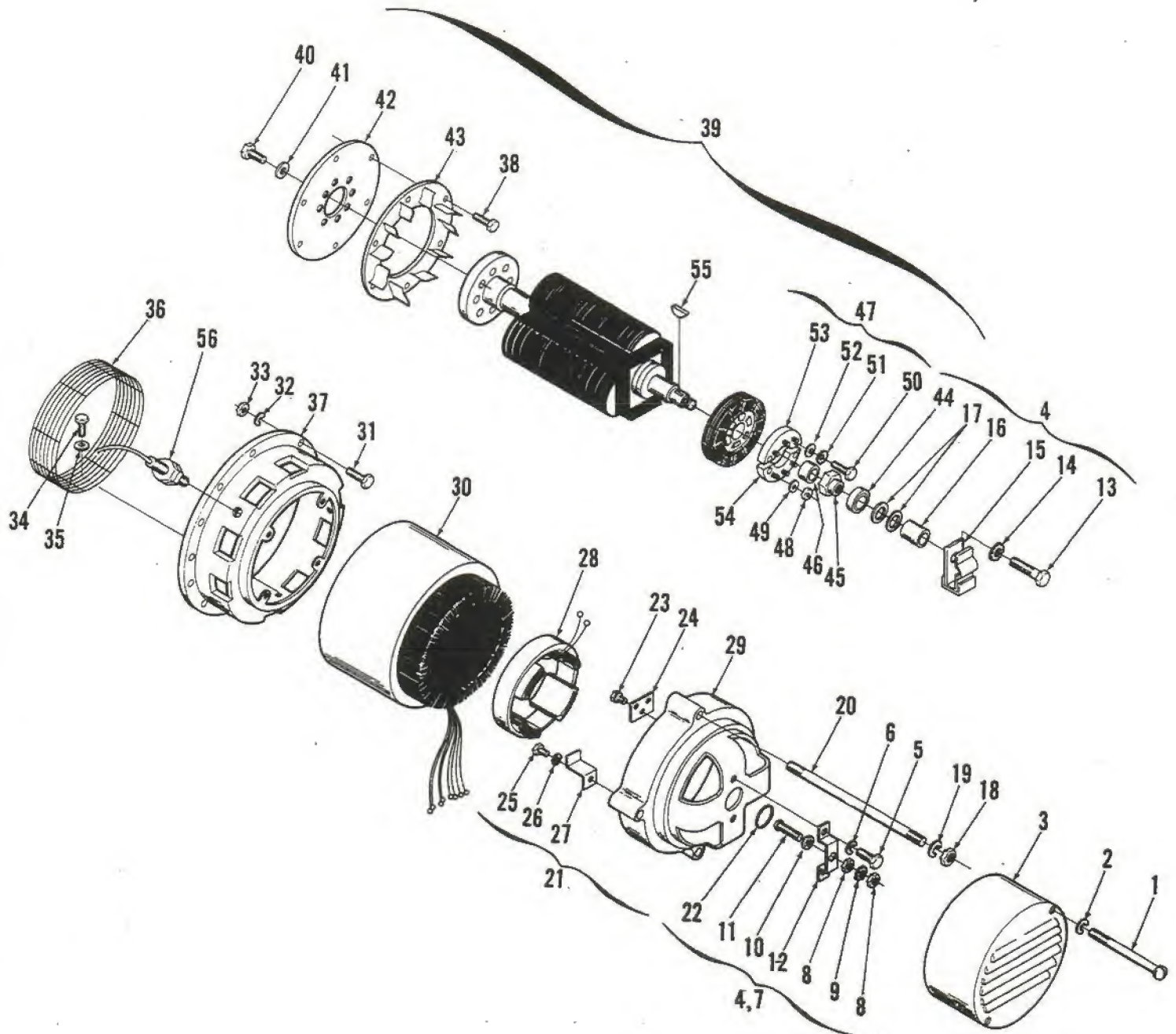
† - Parts Included in Engine Control Wiring Harness.

- Parts Included in Ground Terminal Assembly.

‡ - NOTE: For lamp replacement order 322-0178. Remove and discard plain red lens, install lens with legend from burned out light — lights snap in and out of panel.

£ - Part Number Not Available at Time of Publication.

GENERATOR ASSEMBLY



XG1144

GENERATOR ASSEMBLY

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	812-0167	2	Screw, Machine - Round Head Steel (1/4-20 x 6")
2	850-0040	2	Washer, Lock - Spring (1/4")
3	234-0498	1	Cover, End Bell
4	REF		Switch Assembly, Overspeed (Includes Parts Marked +)
5	800-0003	2	+Screw, Cap - Hex Head (1/4-20 x 1/2")
6	850-0040	2	+Washer, Lock - Spring (1/4")
7	150-1446	1	+Point Assembly (Includes Parts Marked @)
8	862-0001	2	@Nut, Hex (1/4-20)
9	853-0013	1	@Washer, Lock - ET (1/4")
10	870-0250	1	@Nut, Insulating
11	150-0723	1	@Point, Contact
12	150-1445	1	@Bracket, Mounting
13	800-0051	1	+Screw, Cap - Hex Head (3/8-16 x 1-1/4")
14	856-0010	1	+Washer, Lock EIT (3/8")
15	150-0717	1	+Switch, Overspeed
16	150-1735	1	+Spacer
17	526-0029	2	+Washer, Flat (7/32" ID x 5/8" OD x 1/16" Thk)
18	862-0003	4	Nut, Hex (3/8-16)
19	850-0050	4	Washer, Lock - Spring (3/8")
20	STUD (Select as Required)		
	520-0799	4	3/8-16 UNC x 11-1/8" Lg
	520-0800	4	3/8-16 UNC x 12-3/8" Lg
	520-0801	4	3/8-16 UNC x 14" Lg
	520-0802	4	3/8-16 UNC x 15-3/4" Lg
21	END BELL ASSEMBLY (Includes Parts Marked #)		
	211-0263	1	Standard
	211-0334	1	Environmental Protected
22	509-0094	1	#Seal, "O" Ring
23	815-1094	2	#Screw, Tapping - Hex Head With ET Lockwasher (#10-32 x 3/8")
24	232-2418	1	#Terminal Board
25	800-0004	4	#Screw, Cap - Hex Head (1/4-20 x 5/8")
26	853-0013	4	#Washer, Lock - ET (1/4")
27	232-2584	4	#Clip, Retaining
28	#STATOR, EXCITER		
	220-2010	1	Standard
	220-2309	1	£Environmental Protected
29	211-0256	1	#End Bell Generator
30	STATOR, GENERATOR		
	220-2978	1	Code 3
	220-2980	1	Code 9X
	220-2424	1	Code 15
	220-2426	1	‡Code 15 (Extended Stack)
	220-3392	1	£Code 15 (Environmental Protected)
	220-3394	1	‡£Code 15 (Extended Stack and Environmental Protected)
31	800-0052	12	Screw, Cap - Hex Head (3/8-16 x 1-1/2")
32	850-0050	12	Washer, Lock - Spring (3/8")

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
33	862-0011	12	Nut, Hex (3/8-16)
34	815-0220	6	Screw, Drive (#8 x 1/2")
35	526-0179	6	Washer, Flat (7/32" ID x 5/8" OD x 1/16" Thk)
36	234-0594	1	Screen, Air
37	231-0213	1	Adapter, Generator
38	805-0018	8	Bolt, Hex Head-Slotted, Grade 8 (3/8-16 x 1")
39	ROTOR ASSEMBLY, GENERATOR (Includes Parts Marked *)		
	201-2744	1	Code 3
	201-2585	1	Code 9X
	201-2585	1	Code 15
	201-2744	1	‡Code 15 (Extended Stack)
	201-2915	1	£Code 15 (Environmental Protected)
	201-2920	1	‡£Code 15 (Extended Stack and Environmental Protected)
40	805-0025	8	*Bolt, Hex Head - Slotted, Grade 8 (7/16-14 x 3/4")
41	526-0249	8	*Washer, Flat - Hardened (15/32" ID x 1" OD x 1/8" Thk)
42	232-2675	1	*Disk, Drive
43	205-0121	1	*Fan, Generator
44	510-0112	1	*Bearing, Ball
45	870-0284	1	*Nut, Self-locking, Hex (1-1/8 - 12)
46	232-2398	1	*Spacer, Sleeve
47	*ROTOR ASSEMBLY, EXCITER (Includes Parts Marked †)		
	201-2152	1	Standard
	201-2298	1	£Environmental Protected
48	870-0131	6	†Nut, Self-locking, Hex, with ET Lockwasher (#10-32)
49	526-0008	6	†Washer, Flat (13/64" ID x 7/16" OD x 1/32" Thk)
50	813-0100	4	†Screw, Machine - Round Head (#10-32 x 1/2")
51	853-0008	4	†Washer, Lock - ET (#10)
52	526-0008	4	†Washer, Flat (13/64" ID x 7/16" OD x 1/32" Thk)
53	358-0069	1	†Rectifier Assembly - Positive
54	358-0070	1	†Rectifier Assembly - Negative
55	515-0094	1	*Key, Woodruff (#6)
56	150-1648	1	Pickup, Magnetic (Used with Electronic Overspeed Control)

+ - Parts Included in Overspeed Switch Assembly.

@ - Parts Included in Overspeed Point Assembly.

- Parts Included in End Bell Assembly.

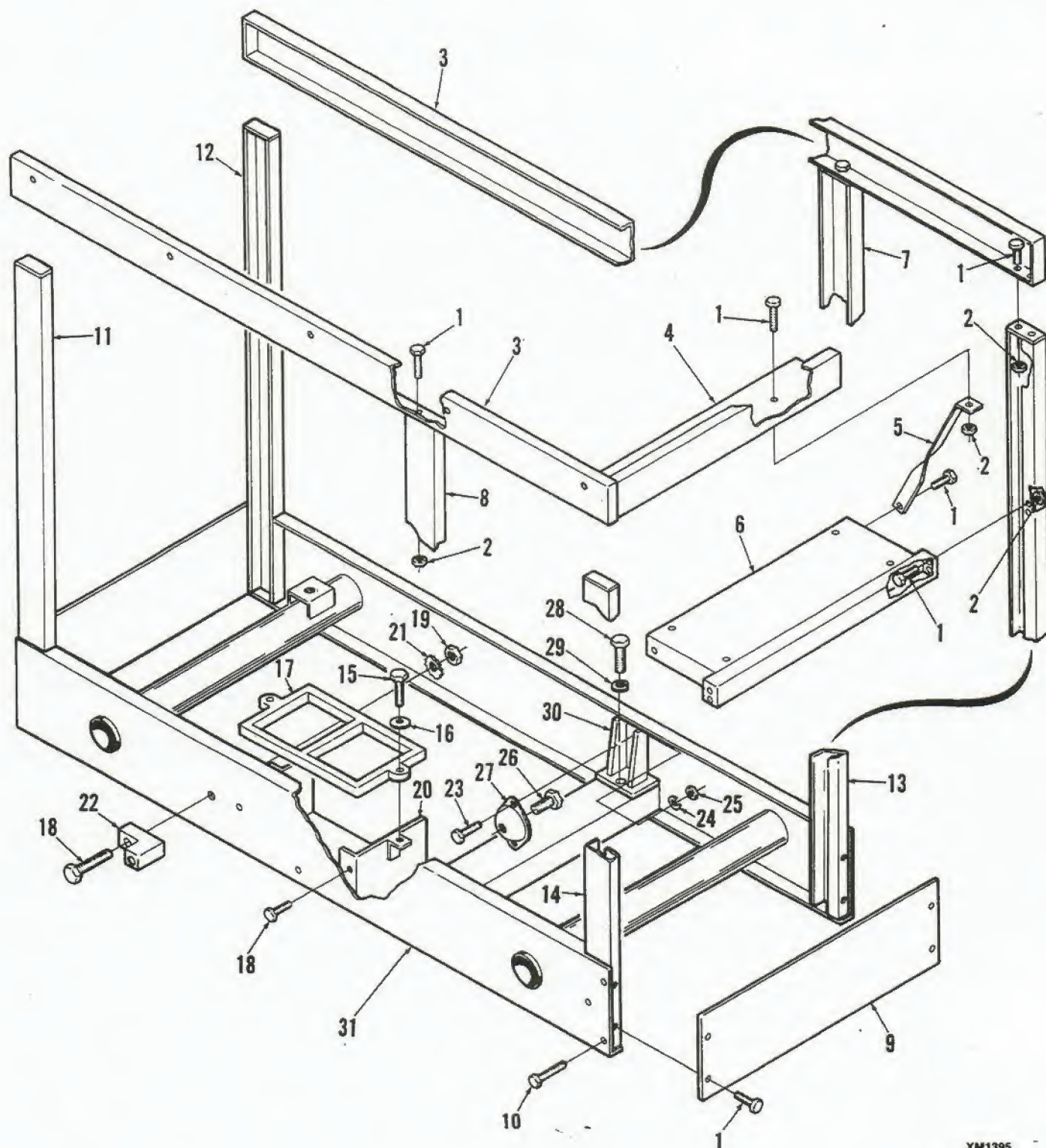
* - Parts Included in Generator Rotor Assembly.

† - Parts Included in Exciter Rotor Assembly.

‡ - Extended Stack type assemblies that are used on sets having full power output on both single and three phase hookups. Both phases carry same kW and kVA ratings.

£ - Environmental protected assemblies or parts which are coated with epoxy and are for use in high humidity areas.

CHASSIS



XM1395

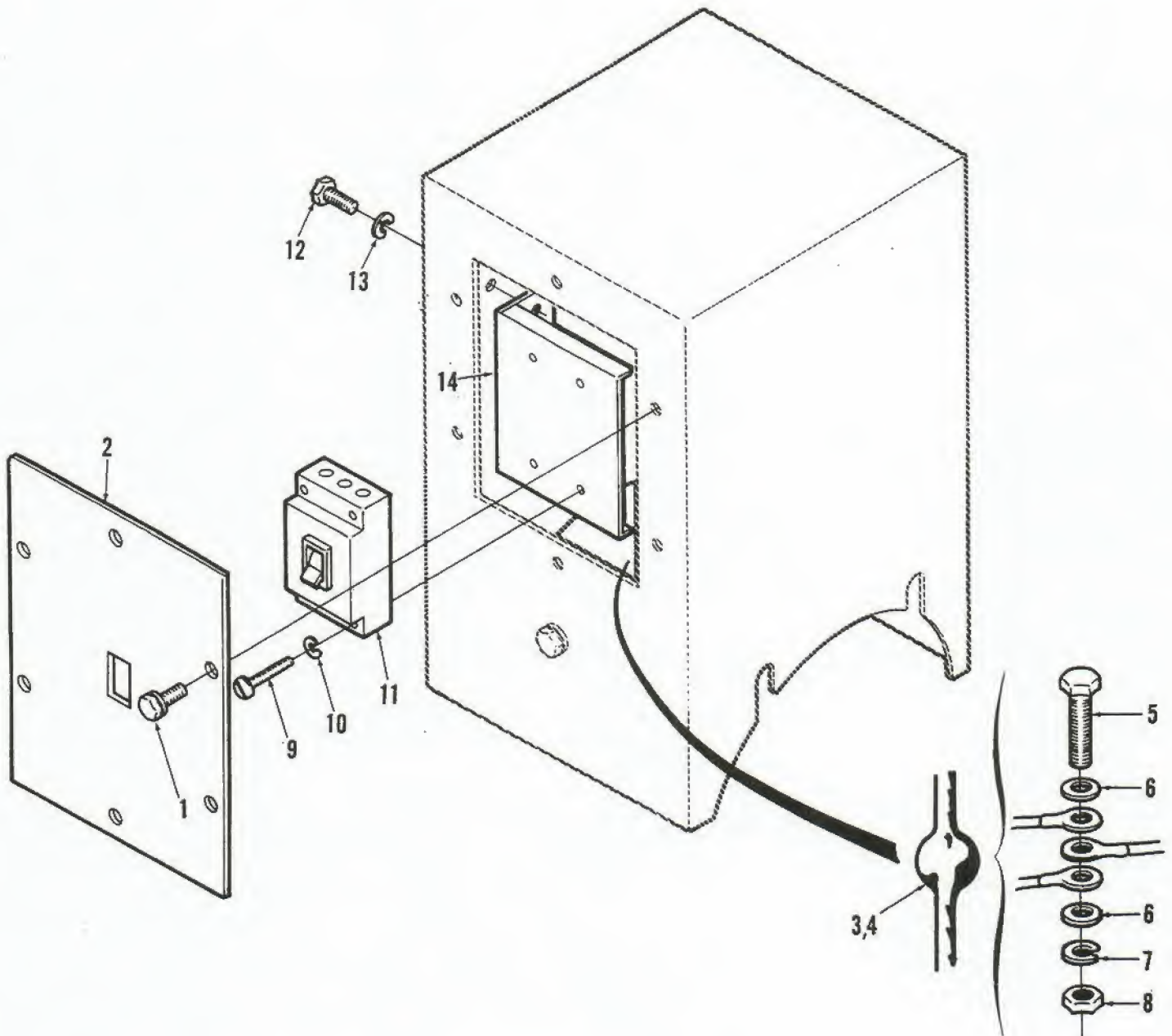
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REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	821-0010	36	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")	17	416-0612	1	Holddown, Battery
2	870-0212	28	Nut, Self-locking - Hex Washer Head (1/4-20)	18	821-0016	4	Screw, Self-locking - Hex Washer Head (5/16-18 x 3/4")
3	403-1349	2	Channel, Top	19	870-0257	4	Nut, Self-locking - Hex Washer Head (5/16-18)
4	403-1352	1	Channel, Rear-Top	20	416-0687	1	Tray, Battery
5	403-1574	2	Bracket, Support - Control	21	856-0008	1	Washer, Lock - EIT (5/16")
6	403-1400	1	Plate, Support - Control	22	332-1473	1	Terminal, Lug
7	403-1343	1	Channel, Center - Left Side	23	800-0090	4	Screw, Cap - Hex Head (1/2-13 x 1")
8	403-1342	1	Channel, Center - Right Side	24	850-0060	4	Washer, Lock - Spring (1/2")
9	403-1371	2	Plate, Cover - End	25	862-0016	4	Nut, Hex (1/2-13)
10	821-0029	12	Screw, Self-locking - Hex Washer Head (3/8-16 x 3/4")	26	800-0553	2	Screw, Cap - Hex Head, Grade 8 (1/2-13 x 1")
11	403-1346	1	Channel, Front - Right Side	27	402-0466	2	Mount, Vibration
12	403-1347	1	Channel, Front - Left Side	28	800-0071	6	Screw, Cap - Hex Head (7/16-14 x 1")
13	403-1344	1	Channel, Rear - Left Side	29	850-0055	6	Washer, Lock - Spring (7/16")
14	403-1245	1	Channel, Rear - Right Side	30	403-1355	2	Support, Generator
15	800-0035	2	Screw, Cap - Hex Head (5/16-18 x 2-1/2")	31	403-1330	1	Chassis
16	526-0115	2	Washer, Flat (11/32" ID x 11/16" OD x 1/16" Thk)				

OPTIONAL EQUIPMENT SECTION

This section contains parts listing of factory installed options.
NOTE: options may not be applicable to all models; for field installations, additional parts are usually required.

OPTIONAL CIRCUIT BREAKER



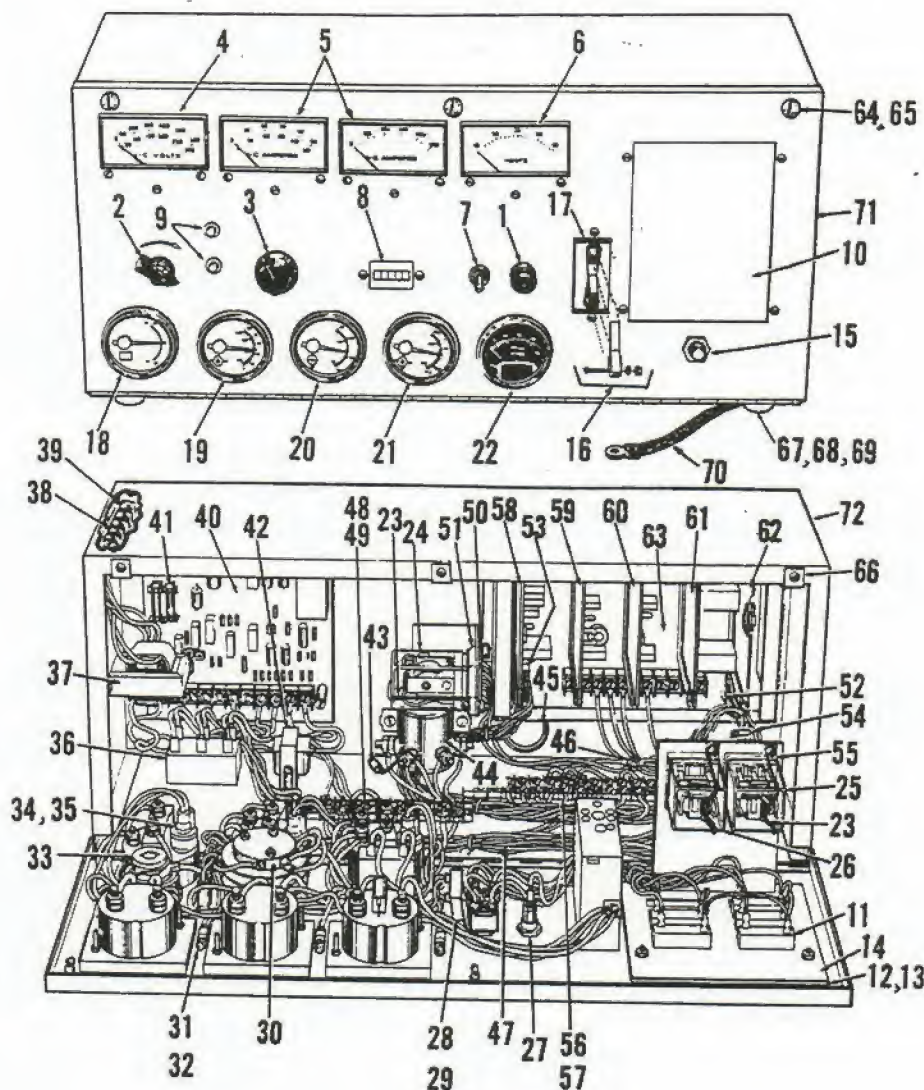
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OPTIONAL CIRCUIT BREAKER

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	815-0350	6	Screw, Tapping - Hex Washer Head (#10-32 x 3/8)
2	301-4885	1	Panel, Cover - Circuit Breaker
3	SLEEVING, INSULATION — SHRINKABLE (Select as Required)		
	898-0863	3/4" ID	
	898-0865	1" ID	
	898-0875	1-1/2" ID	
	898-0869	2" ID	
4	SLEEVING, INSULATION — FIBER GLASS (Select as Required)		
	898-0974	3/4" ID	
	898-0976	1" ID	
5	800-0028	5	Screw, Cap - Hex Head (5/16-18 x 1")
6	526-0022	10	Washer, Flat (21/64" ID x 9/16" OD x 1/16" Thk)
7	850-0045	5	Washer, Lock - Spring (5/16")
8	862-0015	5	Nut, Hex (5/16-18)
9	812-0094	4	Screw, Machine - Round Head (#8-32 x 3-5/8")
10	850-0025	4	Washer, Lock - Spring (#8)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
11	CIRCUIT BREAKER (SELECT AS REQUIRED)		
	320-0344	1	175 AMP, 1 PH, 120/240 VAC
	320-0346	1	150 AMP, 3 PH, 120/208 - 120/240 VAC
	320-0347	1	175 AMP, 3 PH, 120/208 - 120/240 VAC
	320-0348	1	200 AMP, 3 PH, 120/208 - 120/240 VAC
	320-0349	1	225 AMP, 3 PH, 120/208 VAC
	320-0359	1	225 AMP, 1 PH, 120/240 VAC
	320-0379	1	90 AMP, 3 PH, 200/346 - 220/380 - 277/480 VAC
	320-0380	1	100 AMP, 3 PH, 200/346 - 220/380 - 277/480 VAC
	320-0384	1	60 AMP, 3 PH, 200/346 - 220/380 VAC
	320-0411	1	90 AMP, 3 PH, 120/240 VAC
	320-0412	1	100 AMP, 3 PH, 120/208 VAC
	320-0413	1	50 AMP, 3 PH, 277/480 VAC
	320-0414	1	70 AMP, 3 PH, 277/480 VAC
	320-0415	1	40 AMP, 3 PH, 347/600 VAC
	320-0416	1	60 AMP, 3 PH, 347/600 VAC
	320-0417	1	70 AMP, 3 PH, 347/600 VAC
	320-0418	1	90 AMP, 3 PH, 347/600 VAC
	320-0419	1	125 AMP, 3 PH, 200/346 - 220/380 VAC
	320-0425	1	150 AMP, 3 PH, 200/346 VAC
	320-0726	1	150 AMP, 3 PH, 120/208 - 120/240 VAC
	320-0823	1	50 AMP, 3 PH, 277/480 VAC
12	800-0003	2	Screw, Cap - Hex Head (1/4-20 x 1/2")
13	850-0040	2	Washer, Lock - Spring (1/4")
14	301-3197	1	Bracket, Mounting - Circuit Breaker

OPTIONAL SET CONTROL WITH MULTI-FAULT LIGHTS AND AC METERS



SC1314

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	321-0147	1	Fuse, Cartridge (5 AMP)
2	303-0076	1	Knob, Pointer
3	303-0032	1	Knob
4	VOLTMETER		
	302-1175	1	SINGLE SCALE 0-300 Volt, Code 3, 53
	302-1300	1	0-750 Volt, Code 9X DUAL SCALE
	302-1148	1	0-300, 0-600 Volt, Code 15, 515
5	AMMETER		
	302-1176	2	SINGLE SCALE 0-200 AMP, Code 3, 53; Optional Code 15, 515
	302-1298	1	0-50 AMP, Code 9X DUAL SCALE
	302-1147	1	0-75, 0-150 AMP, Code 15, 515
6	METER, FREQUENCY		
	302-1153	1	60 Hertz
	302-1399	1	50 Hertz
7	SWITCH, TOGGLE —		SELECTOR (S15)
	308-0138	1	SPDT - 3 Position
	308-0327	1	SPDT (Penn State Sets)
	302-0885	1	Meter, Time Totalizing
8	322-0211	2	Light, Indicator (High/Low Scale)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
10	ASSEMBLY — SYSTEM FAULT STATUS (Includes Parts Marked ‡)		
	322-0199	1	Five Fault Lights
	322-0295	1	Six Fault Lights
	ATTACHING HARDWARE FOR ASSEMBLY		
	812-0079	4	‡Screw, Machine - Round Head (#8-32 x 1/2")
	870-0221	4	‡Nut, Self-Locking, Hex With ET Lockwasher (#8-32)
11	322-0201	6	‡Light, Indicator (12 VDC)
12	322-0200	1	‡Diffuser, Light
13	‡DISPLAY — FAULT LEGENDS		
	301-4202	1	Five Fault Legends
	301-6258	1	Six Fault Legends
	301-4666	1	‡Bracket - Panel Mounting
14	308-0410	1	Switch, Push - Display Reset
16	320-0307	1	Lock - Circuit Breaker Handle (Penn State Sets)
	ATTACHING HARDWARE FOR LOCK		
	815-0203	1	Screw, Machine - Round Head (#10-32 x 7/8")
	854-0010	1	Washer, Lock - IT (#10)
	871-0010	1	Nut, Hex (#10-32)

OPTIONAL SET CONTROL WITH MULTI FAULT LIGHTS AND AC METERS

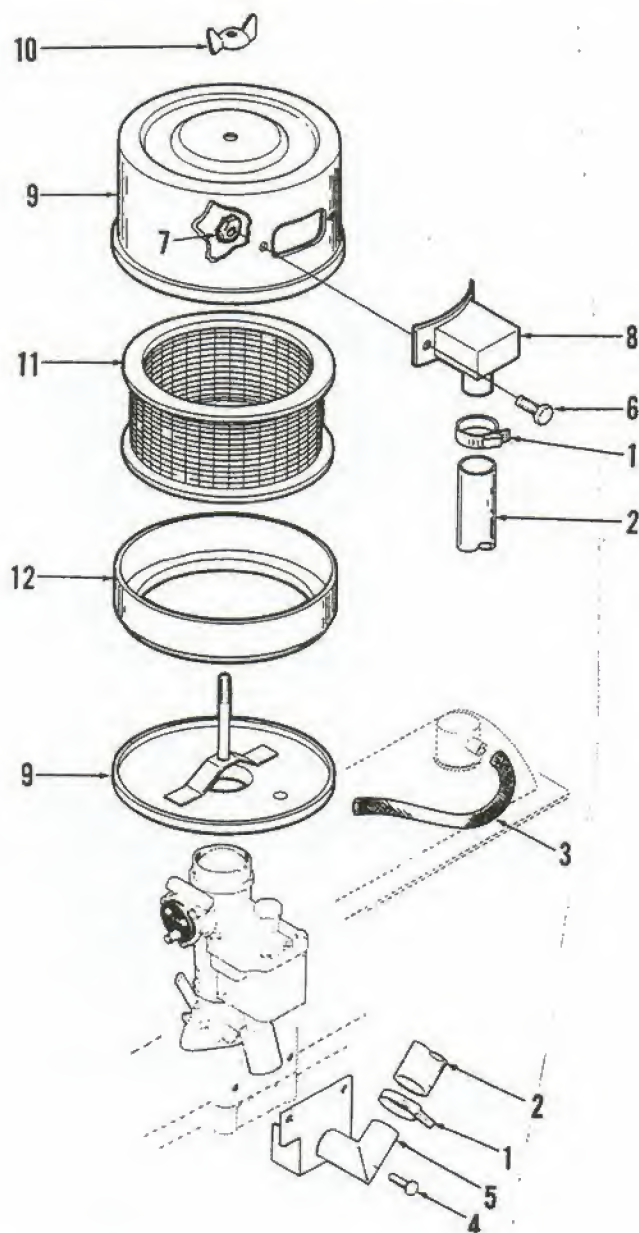
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
17	320-0431	1	Circuit Breaker		526-0062	2	#Washer, Flat - Brass (13/64" ID x 1/2" OD x 1/16" Thk)
	ATTACHING HARDWARE FOR CIRCUIT BREAKER				853-0008	1	#Washer, Lock - ET (#10)
	812-0061	2	Screw, Machine - Round Head (#6-32 x 3/8")		856-0003	1	#Washer, Lock - EIT (#10)
	850-0020	2	Washer, Lock - Spring (#6)		815-0203	1	#Screw, Machine - Round Head, Brass (#10-32 x 7/8")
	815-0203	1	Screw, Machine - Round Head, Brass (#10-32 x 7/8")	47	HARNES, WIRING —		AC CONTROL (Includes Parts Marked *)
	871-0010	1	Nut, Hex - Brass (#10-32)		338-1152	1	Code 15, 515, 9X
	853-0008	1	Washer, Lock - ET (#10)		338-1259	1	Code 3, 53; Also 15 With Six Fault Lights
	526-0049	1	Washer, Flat - Brass (13/64" ID x 7/16" OD x 132" Thk)	48	332-0607	1	*Block, Terminal - 12 Place (TB21)
18	302-1154	1	Ammeter (30-0-30)	49	332-2115	1	Strip, Marker (#61 Through 71)
19	193-0243	1	Gauge, Oil Pressure (0-100 PSI)	50	350-1201	1	*Resistor With Terminals (Code 15, 515)
20	193-0245	1	Gauge, Water Temperature (100-280 F)	51	323-0765	1	*Socket, Relay (Code 15, 515)
21	193-0248	1	Gauge, Oil Temperature (150-350 F)	52	338-1151	1	Harness, Wiring — Engine Control (Includes Parts Marked †)
22	302-0726	1	Tachometer	53	323-0984	2	†Connector, Plug (12 Pin)
23	307-1157	3	Spring, Holddown - Relay	54	357-0040	1	†Diode With Terminals & Leads
24	307-1061	1	Relay - 240 VAC (K21)	55	323-0765	2	†Socket, Relay
25	307-1058	1	Relay - 12 VDC (K12)	56	332-1005	1	†Block, Terminal (20 Place)
26	307-1061	1	Relay - 240 VAC (K14)	57	332-1559	1	Strip, Marker - #21 Through 40
27	321-0217	1	Holder, Fuse	58	300-1585	1	Control, Start Disconnect
28	333-0194	1	Flasher, DC (Used on Six Fault Light System)	59	300-1586	1	Control, Over Speed
	ATTACHING HARDWARE FOR FLASHER			60	300-1587	1	Control, Engine Monitor
	813-0105	1	Screw, Machine - Round Head (#10-32 x 1")	61	300-1588	1	Control, Shutdown
29	301-6053	1	Bracket, Mounting - Flasher	62	300-1589	1	Control, Start-Stop
30	308-0284	1	Switch, Rotary - Selector	63	300-1590	1	Chassis - Engine Controls (Includes Parts Marked Δ)
31	322-0203	3	Lamp, Incandescent (14 VDC, 3 CP, T-1-3/4)		332-1917	5	ΔPlug, Keying
32	322-0213	3	Lampholder		301-3880	2	ΔBracket, Module Cover
	ATTACHING HARDWARE FOR LAMP HOLDERS				323-0983	2	ΔConnector, Receptacle
	812-0029	3	Screw, Machine - Round Head (#4-40 x 3/8")		332-1887	5	ΔHousing, PC Board Terminals
	853-0001	3	Washer, Lock - ET (#4)		332-1909	1	ΔBlock, Terminal
	860-0003	3	Nut, Hex (#4-40)		308-0324	2	ΔSwitch, Slide
33	303-0170	1	Rheostat - 35K Ohm, 25 Watt (R21)		356-0068	2	ΔCapacitor (180 Mfd, 40 Volt)
34	322-0004	4	Lamp, Incandescent (14 VDC, 1.4 CP, T-3-1/4)		301-4830	1	ΔCover
35	322-0210	4	Lampholder (Fits Gauges)	64	406-0334	3	Clip, Retaining - Turnbutton Fastener
36	305-0675	1	Rectifier, Bridge	65	406-0333	3	Stud, Turnbutton Fastener
	ATTACHING PARTS FOR RECTIFIER			66	406-0332	3	Receptacle, Turnbutton Fastener
	812-0070	2	Screw, Machine - Round Head (#6-32 x 1-1/4")	67	800-0045	4	Screw, Cap - Hex Head (5/16-18 x 3/8")
	850-0020	2	Washer, Lock - Spring (#6)	68	850-0045	4	Washer, Lock - Spring (5/16")
37	315-0431	1	Transformer, Voltage	69	402-0070	4	Dampener, Vibration
	ATTACHING PARTS FOR TRANSFORMER			70	337-0049	1	Strap, Ground
	812-0061	2	Screw, Machine - Round Head (#6-32 x 3/8")		ATTACHING PARTS FOR STRAP		
	853-0003	2	Washer, Lock - ET (#6)		800-0045	1	Screw, Cap - Hex Head (5/16-18 x 3/8")
38	332-0604	1	Block, Terminal - TB22C (5 Place)		850-0045	1	Washer, Lock - Spring (5/16")
39	332-2116	1	Strip, Marker (H2 Through H6)		856-0008	2	Washer, Lock - EIT (5/16")
40	332-1956	1	Regulator, Voltage (Includes Fuses)		862-0015	1	Nut, Hex (5/16-18)
41	321-0204	2	Fuse, Cartridge (1/4 AMP)	71	PANEL, CONTROL —		WITH HINGE & FLOOR PLATE CODE 3, 53
42	315-0384	1	Reactor		301-5702	1	With Three Gauge, Four Meter Mtg. Holes
	ATTACHING PARTS FOR REACTOR				301-6587	1	With Four Gauge, Four Meter Mtg. Holes
	812-0061	2	Screw, Machine - Round Head (#6-32 x 3/8")	£		1	With Five Gauge, Four Meter Mtg. Holes
	853-0003	2	Washer, Lock - ET (#6)		301-5338	1	CODE 15, 515, 9X
43	357-0026	1	Diode With Terminals		£	1	With Three Gauge and Three Meter Mtg. Holes
44	307-1500	1	Relay, Solenoid (K13)		£	1	With Four Gauge and Three Meter Mtg. Holes
45	508-0001	4	Grommet		£	1	With Five Gauge and Three Meter Mtg. Holes
46	GROUND TERMINAL ASSEMBLY (Includes Parts Marked #)			72	301-5350	1	Box, Control
	871-0010	2	#Nut, Hex - Brass (#10-32)				
	850-0030	1	#Washer, Lock - Spring (#10)				

‡ - Parts Included in System Fault Status Assembly.

* - Parts Included in AC Control Wiring Harness.

† - Parts Included in Engine Control Wiring Harness.

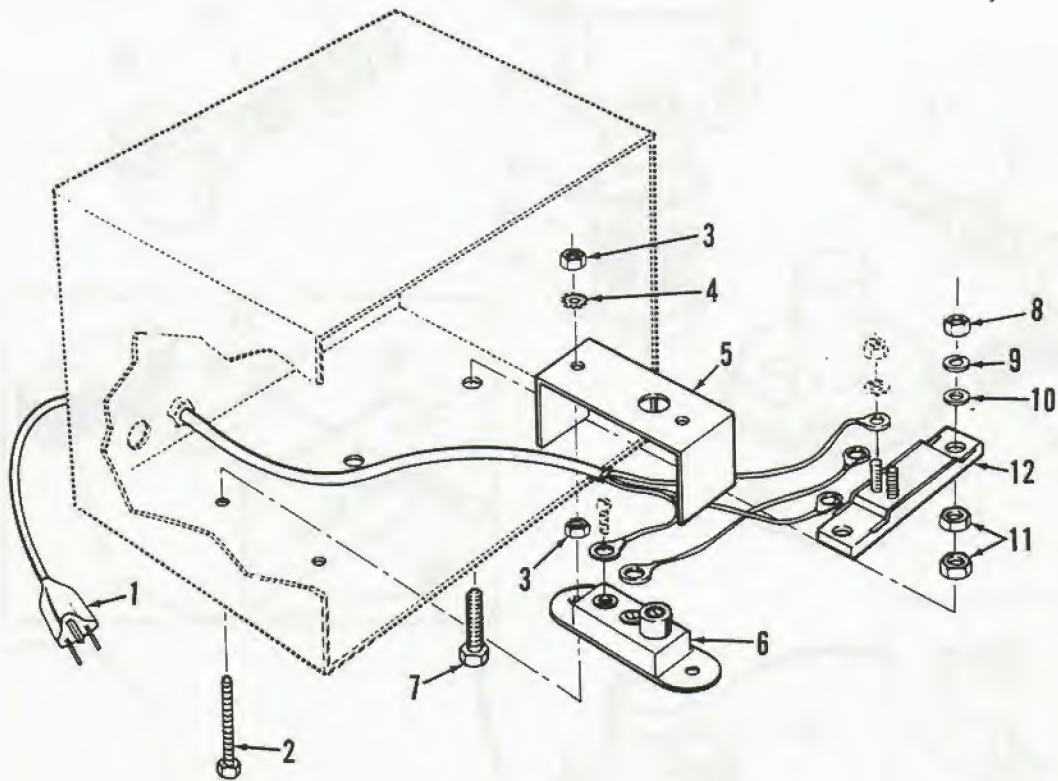
OPTIONAL AIR CLEANER (WITH HEATER SYSTEM)



XFS1425

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0365	2	Clamp, Hose
2	503-0879	1	Hose, Rubber (2" ID x 16")
3	503-0891	1	Hose, Rubber - Breather (5/8" ID x 14" Lg)
4	800-0028	2	Screw, Self-locking - Hex Head (5/16-18 x 1")
5	140-1568	1	Plenum, Air Heater
6	821-0008	2	Screw, Self-locking - Hex Washer Head (1/4-20 x 5/16)
7	870-0212	2	Nut, Self-locking - Hex Washer Head (1/4-20)
8	140-1431	1	Inlet, Air Heater
9	140-1584	1	Air Cleaner (Includes Nut and Element)
10	865-0020	1	Nut, Wing (1/4-20)
11	140-1089	1	Element, Air Cleaner
12	140-1401	1	Retainer - Air Heater

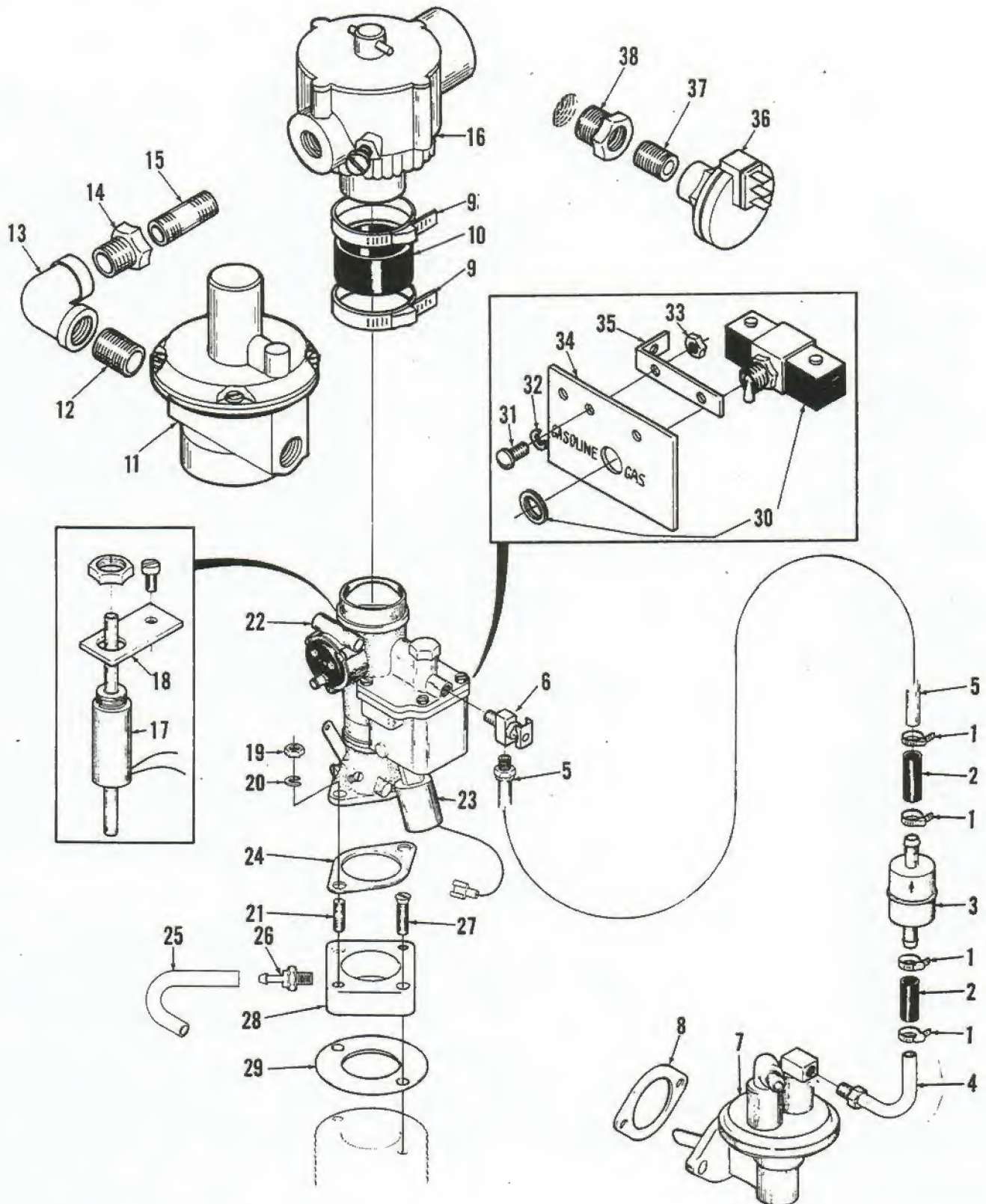
OPTIONAL CONTROL HEATER



SC-1156

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	335-0110	1	Cable, Electrical (3 Wire)
2	812-0090	2	Screw, Machine - Round Head (#6-32 x 2-1/4")
3	860-0006	4	Nut, Hex (#6-32)
4	856-0001	2	Washer, Lock - EIT (#6)
5	301-1886	1	Cover, Thermostat
6	309-0128	1	Thermostat - Adjustable
7	800-0007	2	Screw, Cap - Hex Head (1/4-20 x 1")
8	862-0001	2	Nut, Hex (1/4-20)
9	850-0040	2	Washer, Lock - Spring (1/4)
10	526-0052	2	Washer, Flat (17/64" ID x 9/16" OD x 1/16" Thk)
11	862-0015	4	Nut, Hex (5/16-18) - Used As Spacers
12	333-0151	1	Heater - 75 Watt, 120 VAC; 300 Watt, 240 VAC

OPTIONAL DUAL FUEL SYSTEM (GASOLINE & NAT. GAS)

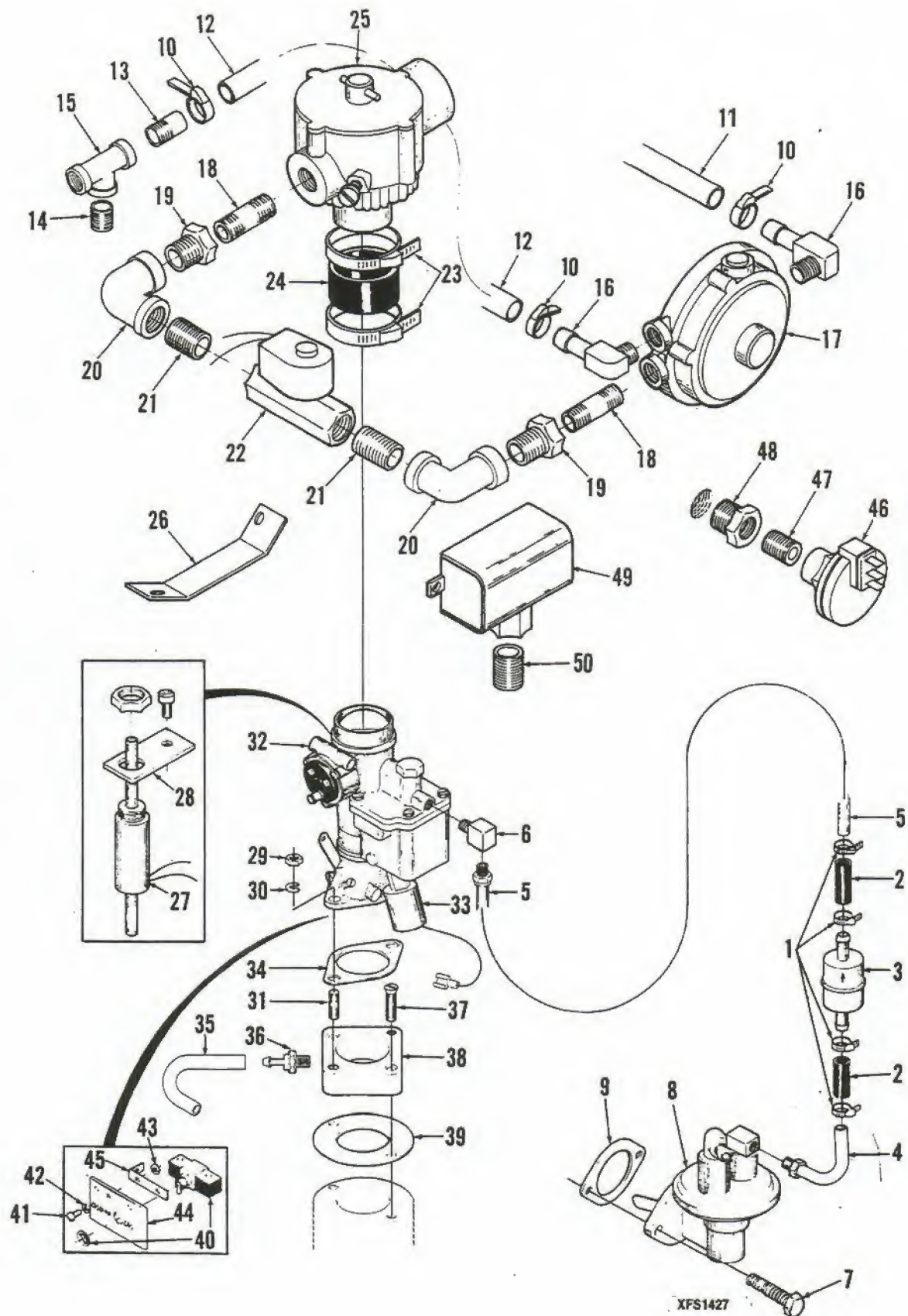


OPTIONAL DUAL FUEL SYSTEM (GASOLINE & NAT. GAS)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0685	4	Clamp, Hose
2	503-0883	2	Hose, Rubber (5/16" ID x 2" Lg)
3	149-1569	1	Filter, Fuel
4	149-1573	1	Line, Fuel
5	149-1558	1	Line, Fuel
6	504-0085	1	Valve, Shutoff (1/8" NPT x 5/16" Tube)
7	149-1568	1	Pump, Fuel
8	149-0736	1	Gasket - Fuel Pump
9	503-0465	2	Clamp, Hose
10	503-0542	1	Hose, Rubber (1-1/4" ID x 2-1/4" Lg)
11	148-0597	1	Regulator, Pressure - Gas (3/4" NPT)
12	505-0102	1	Nipple, Pipe - Close (3/4" NPT x 1-3/8" Lg)
13	505-0132	1	Elbow, Pipe - 90 DEG (3/4" NPT)
14	505-0021	1	Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT)
15	505-0100	1	Nipple, Pipe - Close (1/2" NPT x 1-1/8" Lg)
16	148-0691	1	Mixer, Gas
17	307-2017	1	Solenoid - 12 VDC (Choke Closing)
18	307-2014	1	Plate, Mounting - Solenoid
19	104-0091	2	Nut, Hex (3/8-24)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
20	850-0050	2	Washer, Lock - Spring (3/8")
21	520-0311	2	Stud (3/8-24 x 3/8-16 x 1-5/8" Lg)
22	141-0854	1	Carburetor, Gasoline (Includes Fuel Shutoff Solenoid)
23	141-0850	1	Solenoid - 12 VDC (Fuel Shutoff)
24	154-0133	1	Gasket - Carburetor
25	503-0871	1	Hose, Rubber (5/16" ID x 13-1/2" Lg)
26	502-0582	1	Adapter, Hose (1/8-22 NPT x 5/16" Hose)
27	814-0200	2	Screw, Machine - Flat Head (3/8-16 x 1-1/4")
28	148-0800	1	Adapter - Carburetor To Manifold
29	148-0775	1	Gasket
30	308-0005	1	Switch, Toggle
31	813-0100	2	Screw, Machine - Round Head (#10-32 x 1/2")
32	850-0030	2	Washer, Lock - Spring (#10)
33	871-0010	2	Nut, Hex (#10-32)
34	308-0150	1	Plate, Mounting - Switch
35	306-0155	1	Bracket, Mounting
36	148-0367	1	Switch, Control - Vacuum (12 VDC)
37	502-0098	1	Nipple, Pipe - Close (1/8" NPT x 3/4" Lg)
38	505-0016	1	Bushing, Reducer - Hex (3/8" NPT x 1/8" NPT)

OPTIONAL DUAL FUEL SYSTEM (GASOLINE & LPG LIQUID)

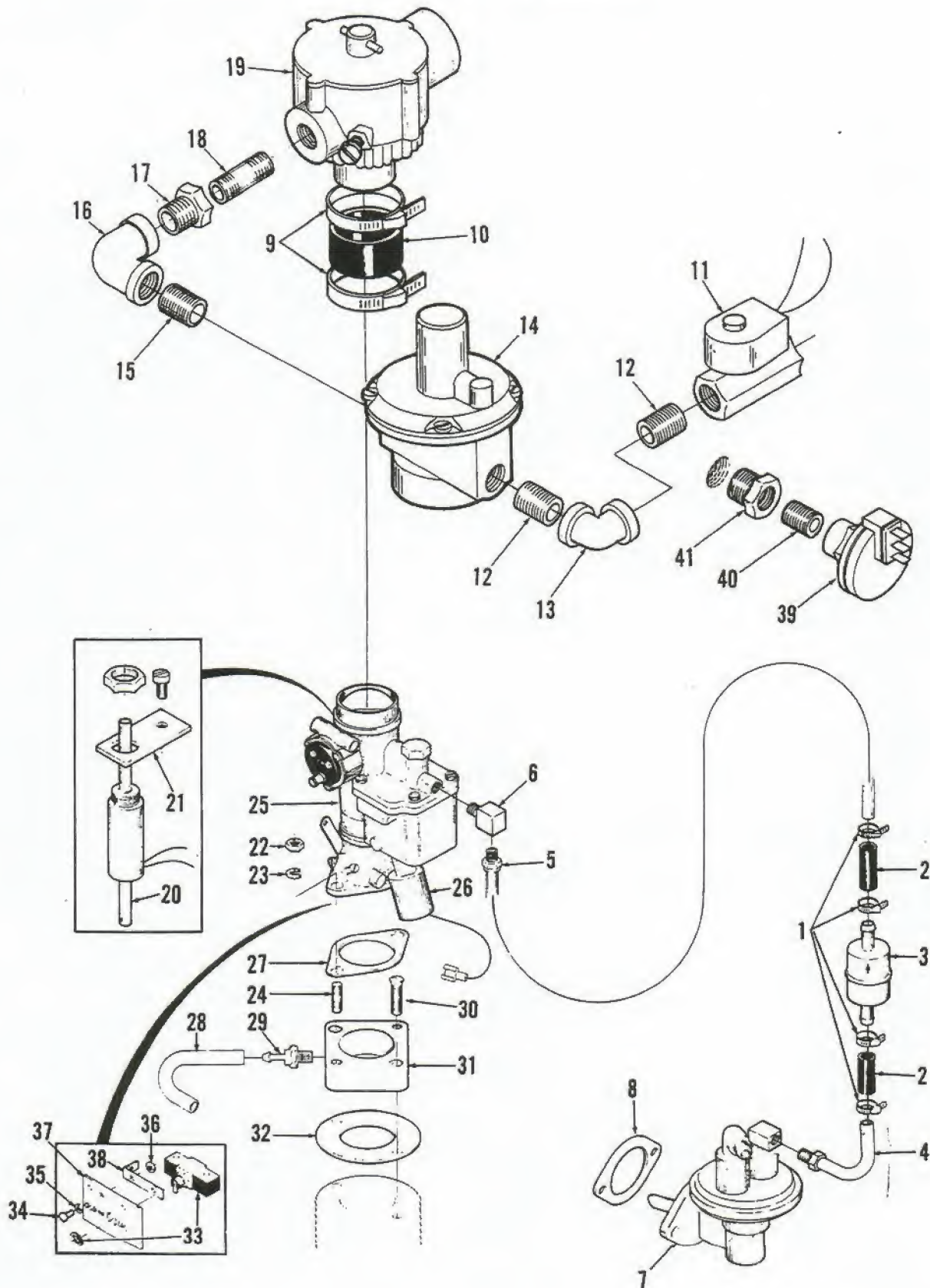


**OPTIONAL
DUAL FUEL SYSTEM
(GASOLINE & LPG LIQUID)**

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0685	4	Clamp, Hose
2	503-0883	2	Hose, Rubber (5/16" ID x 2" Lg)
3	149-1569	1	Filter, Fuel
4	149-1573	1	Line, Fuel
5	149-1558	1	Line, Fuel
6	502-0004	1	Elbow, Pipe - 90 DEG (1/8" NPT x 5/16" Tube)
7	821-0021	2	Screw, Self-locking - Hex Washer Head (5/16-18 x 1")
8	149-1568	1	Pump, Fuel
9	149-0736	1	Gasket - Fuel Pump
10	503-0183	4	Clamp, Hose
11	503-1169	1	Hose, Rubber (5/8" ID x 48" Lg)
12	503-0833	1	Hose, Rubber (5/8" ID x 24" Lg)
13	505-0135	1	Nipple, Pipe - Half (3/8" NPT x 1-1/2" Lg)
14	505-0101	1	Nipple, Pipe - Close (3/8" NPT x 1" Lg)
15	505-0060	1	Tee, Pipe (3/8" NPT)
16	502-0587	2	Adapter - Hose To Pipe, 90 DEG (3/4" NPT x 5/8" Hose)
17	148-0737	1	Converter - Regulator, LPG (1/2" NPT)
18	505-0100	2	Nipple, Pipe - Close (1/2" NPT x 1" Lg)
19	505-0021	2	Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT)
20	505-0132	2	Elbow, Pipe - 90 DEG (3/4" NPT)
21	505-0102	2	Nipple, Pipe - Close (3/4" NPT x 1-3/8" Lg)
22	307-0312	1	Valve, Solenoid - 12 VDC (3/4" NPT)
23	503-0465	2	Clamp, Hose
24	503-0542	1	Hose, Rubber (1-1/4" ID x 2-1/4" Lg)
25	148-0691	1	Mixer, Gas

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
26	148-0809	1	Bracket, Support - Carburetor To Regulator
27	307-2017	1	Solenoid - 12 VDC (Choke Closing)
28	307-2014	1	Plate, Mounting - Solenoid
29	104-0091	2	Nut, Hex (3/8-24)
30	850-0050	2	Washer, Lock - Spring (3/8")
31	520-0311	2	Stud (3/8-24 x 3/8-16 x 1-5/8" Lg)
32	141-0854	1	Carburetor, Gasoline (Includes Fuel Shutoff Solenoid)
33	141-0850	1	Solenoid - 12 VDC (Fuel Shutoff)
34	154-0133	1	Gasket - Carburetor
35	503-0871	1	Hose, Rubber (5/16" ID x 13-1/2" Lg)
36	502-0582	1	Adapter, Hose (1/8-22 NPT x 5/16" Hose)
37	814-0200	2	Screw, Machine - Flat Head (3/8-16 x 1-1/4")
38	148-0800	1	Adapter - Carburetor To Manifold
39	148-0775	1	Gasket
40	308-0005	1	Switch, Toggle
41	813-0100	2	Screw, Machine - Round Head (#10-32 x 1/2")
42	850-0030	2	Washer, Lock - Spring
43	871-0010	2	Nut, Hex (#10-32)
44	308-0150	1	Plate, Mounting - Switch
45	306-0155	1	Bracket, Mounting
46	148-0367	1	Switch, Control - Vacuum (12 VDC)
47	502-0098	1	Nipple, Pipe - Close (1/8" NPT x 3/4" Lg)
48	505-0016	1	Bushing Reducer - Hex (3/8" NPT x 1/8" NPT)
49	148-0627	1	Switch, Pressure - 12 VDC (For Automatic Fuel Switching Systems)
50	505-0097	1	Nipple, Pipe - Close (1/4" NPT x 7/8")

**OPTIONAL
DUAL FUEL SYSTEM
(GASOLINE & LPG VAPOR)**

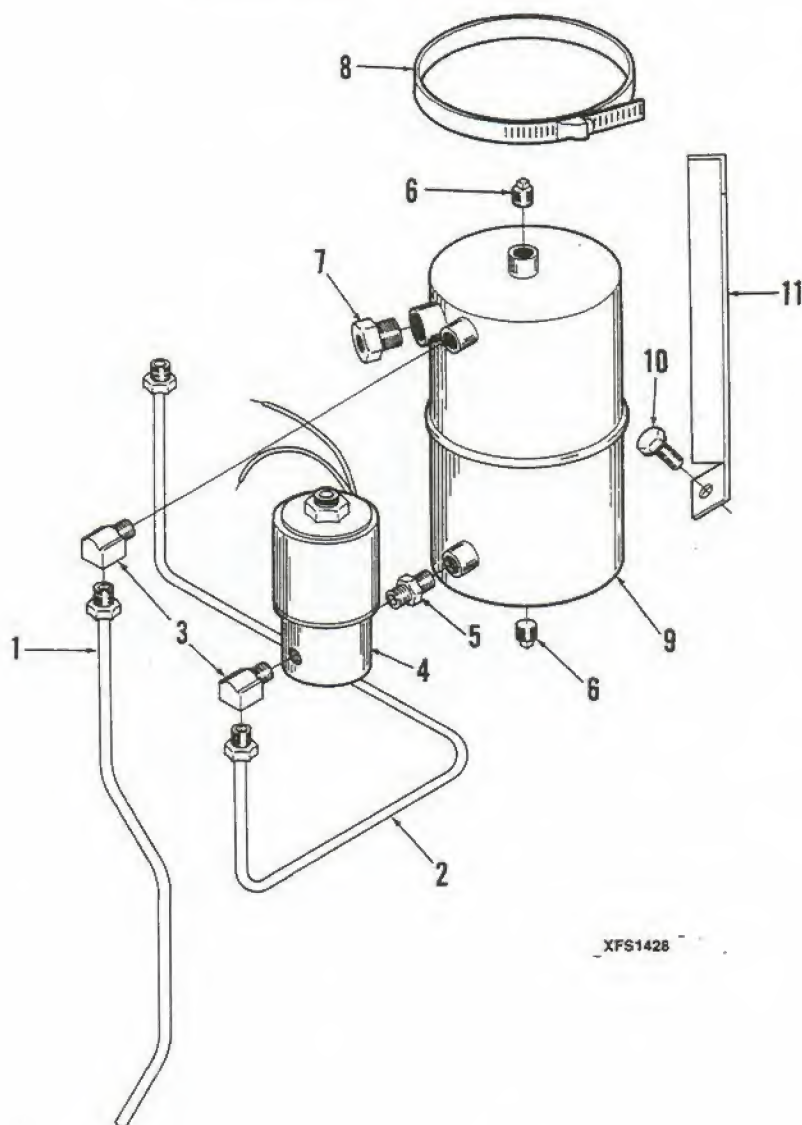


XFS1430

OPTIONAL DUAL FUEL SYSTEM (GASOLINE & LPG VAPOR)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0685	4	Clamp, Hose	21	307-2014	1	Plate, Mounting - Solenoid
2	503-0883	2	Hose, Rubber (5/16" ID x 2" Lg)	22	104-0091	2	Nut, Hex (3/8-24)
3	149-1569	1	Filter, Fuel	23	850-0050	2	Washer, Lock - Spring (3/8")
4	149-1573	1	Line, Fuel	24	520-0311	2	Stud (3/8-24 x 3/8-16 x 1-5/8" Lg)
5	149-1558	1	Line, Fuel	25	141-0854	1	Carburetor, Gasoline (Includes Fuel Shutoff Solenoid)
6	504-0085	1	Valve, Shutoff (1/8" NPT x 5/16" Tube)	26	141-0850	1	Solenoid - 12 VDC (Fuel Shutoff)
7	149-1568	1	Pump, Fuel	27	154-0133	1	Gasket - Carburetor
8	149-0736	1	Gasket - Fuel Pump	28	503-0871	1	Hose, Rubber (5/16" ID x 13-1/2" Lg)
9	503-0465	2	Clamp, Hose	29	502-0582	1	Adapter, Hose (1/8-22 NPT x 5/16" Hose)
10	503-0542	1	Hose, Rubber (1-1/4" ID x 2-1/4" Lg)	30	814-0200	2	Screw, Machine - Flat Head (3/8-16 x 1-1/4")
11	307-0312	1	Valve, Solenoid - 12 VDC (3/4" NPT)	31	148-0800	1	Adapter - Carburetor To Manifold
12	505-0102	2	Nipple, Pipe - Close (3/4" NPT x 1-3/8" Lg)	32	148-0775	1	Gasket
13	505-0132	1	Elbow, Pipe - 90 DEG (3/4" NPT)	33	308-0005	1	Switch, Toggle
14	148-0597	1	Regulator, Pressure - Gas (3/4" NPT)	34	813-0100	2	Screw, Machine - Round Head (#10-32 x 1/2")
15	505-0102	1	Nipple, Pipe - Close (3/4" NPT x 1-3/8" Lg)	35	850-0030	2	Washer, Lock - Spring
16	505-0132	1	Elbow, Pipe - 90 DEG (3/4" NPT)	36	871-0010	2	Nut, Hex (#10-32)
17	505-0021	1	Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT)	37	308-0150	1	Plate, Mounting - Switch
18	505-0100	1	Nipple, Pipe - Close (1/2" NPT x 1-1/8" Lg)	38	306-0155	1	Bracket, Mounting
19	148-0691	1	Mixer, Gas	39	148-0367	1	Switch, Control - Vacuum (12 VDC)
20	307-2017	1	Solenoid - 12 VDC (Choke Closing)	40	502-0098	1	Nipple, Pipe - Close (1/8" NPT x 3/4" Lg)
				41	505-0016	1	Bushing, Reducer - Hex (3/8" NPT x 1/8" NPT)

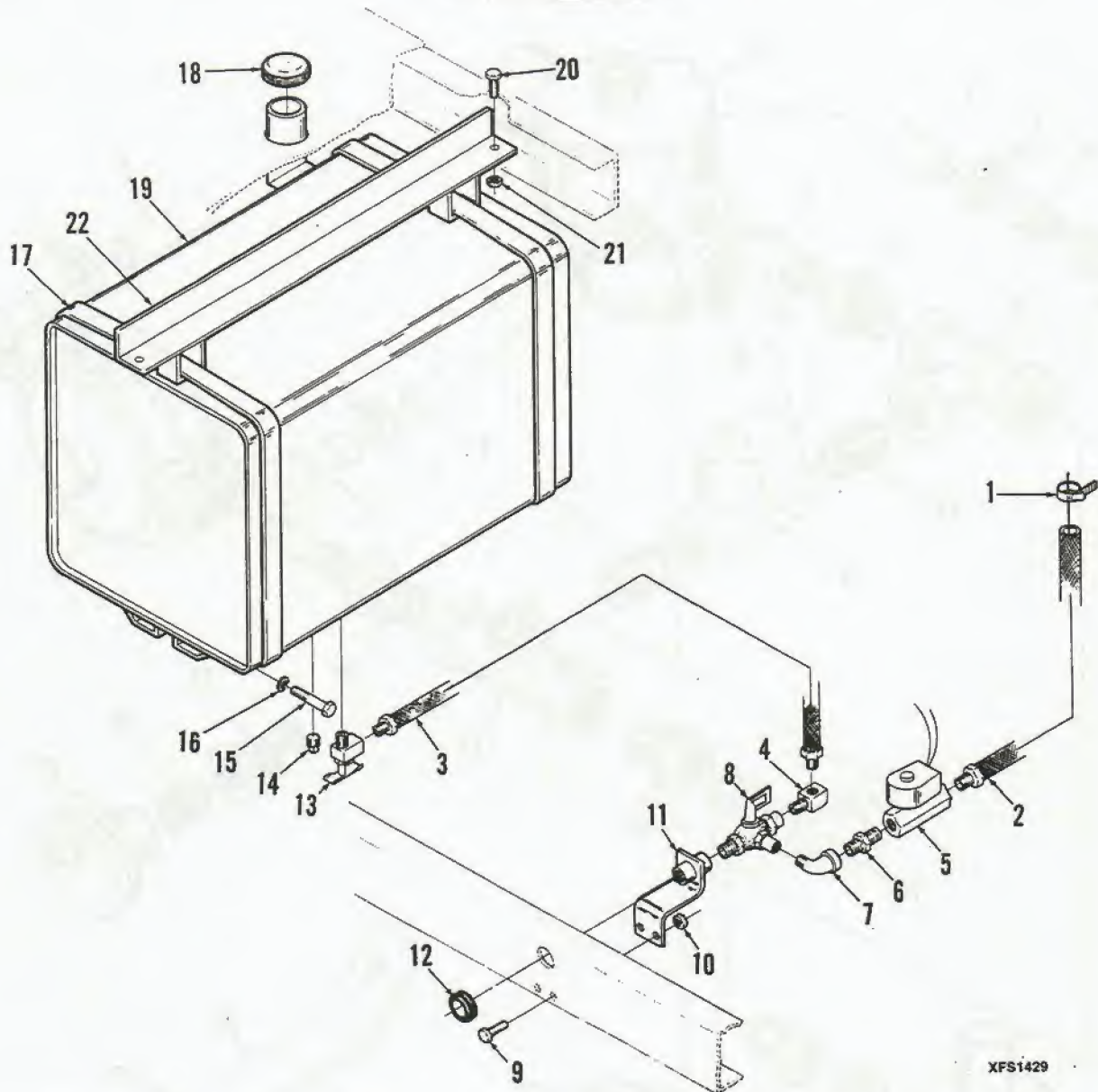
OPTIONAL FUEL TANK RESERVOIR



XFS1428

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	149-1574	1	Line, Fuel - Preformed Tubing (Fuel Pump To Tank)
2	149-1575	1	Line, Fuel - Preformed Tubing (Tank to Carburetor)
3	502-0004	2	Elbow, Pipe - 90 DEG, Brass, (1/8" NPT x 1/4" Tube)
4	307-0565	1	Valve, Solenoid - 12 VDC (1/8" NPT)
5	502-0082	1	Nipple, Pipe - Hex, Brass (1/8" NPT)
6	505-0057	2	Plug, Pipe - Square Head (1/8" NPT)
7	159-0705	1	Bushing, Reducer - Hex, With Flow Restricting Plug (3/8" NPT x 1/8" NPT)
8	503-0612	2	Clamp, Hose
9	159-0294	1	Tank, Fuel (One Quart)
10	821-0029	1	Screw, Self-Locking - Hex Washer Head (3/8-16 x 3/4")
11	159-1070	1	Bracket, Mounting - Fuel Tank

OPTIONAL FUEL TANK-MOUNTED (HOUSED SETS)

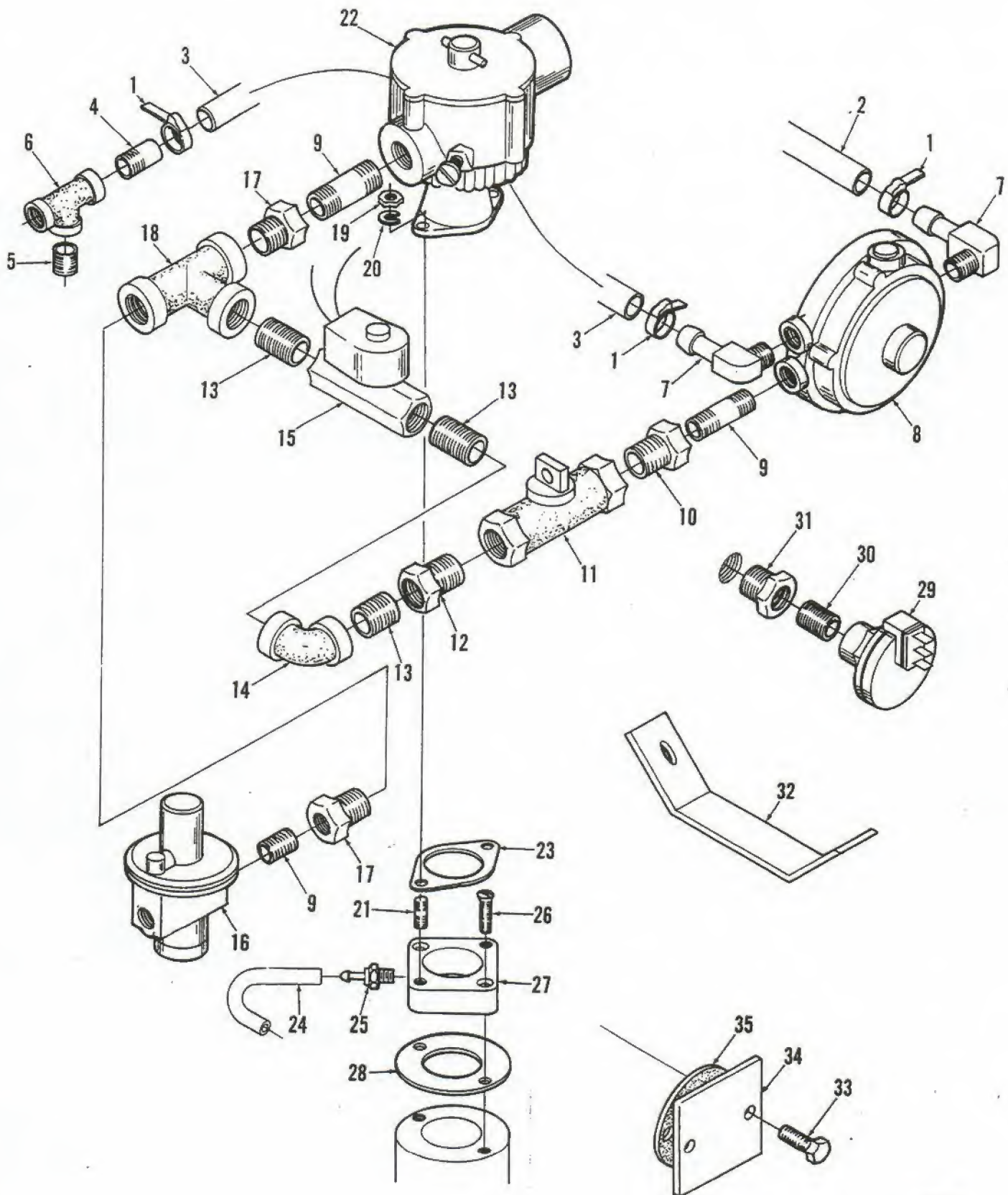


XFS1429

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0547	1	Clamp, Hose
2	501-0134	1	Line, Fuel - Flexible (24" Lg x 1/4" NPT Male)
3	501-0011	1	Line, Fuel - Flexible (52" Lg x 1/4" NPT Male Both Ends)
4	502-0002	1	Elbow, Pipe - 90 DEG, Inverted Male (1/8" NPT x 1/4" Tube)
5	307-0565	1	Valve, Solenoid - 12 VDC (1/8" NPT)
6	502-0082	1	Nipple, Pipe - Hex (1/8" NPT)
7	502-0020	1	Elbow, Pipe - 90 DEG. Street (1/8" NPT)
8	504-0004	1	Valve, Control - 3 Way (1/8" NPT)
9	821-0010	2	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")
10	870-0212	2	Nut, Self-locking - Hex Washer Head (1/4-20)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
11	403-1559	1	Bracket with Pipe Coupling
12	508-0225	1	Grommet
13	504-0007	1	Valve, Control - Shutoff (1/8" NPT x 1/4 Tube)
14	505-0057	1	Plug, Pipe - Square Head (1/8" NPT)
15	812-0158	2	Screw, Machine - Round Head (1/4-20 x 2")
16	850-0040	2	Washer, Lock - Spring (1/4")
17	159-1082	2	Strap, Mounting - Fuel Tank
18	159-0515	1	Cap, Fuel Tank
19	159-1081	1	Tank, Fuel (15 Gal.)
20	821-0010	4	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")
21	870-0212	4	Nut, Self-locking - Hex Washer Head (1/4-20)
22	159-1083	2	Support, Mounting - Fuel Tank

**OPTIONAL
DUAL FUEL SYSTEM*
(NAT. GAS & LPG LIQUID)**

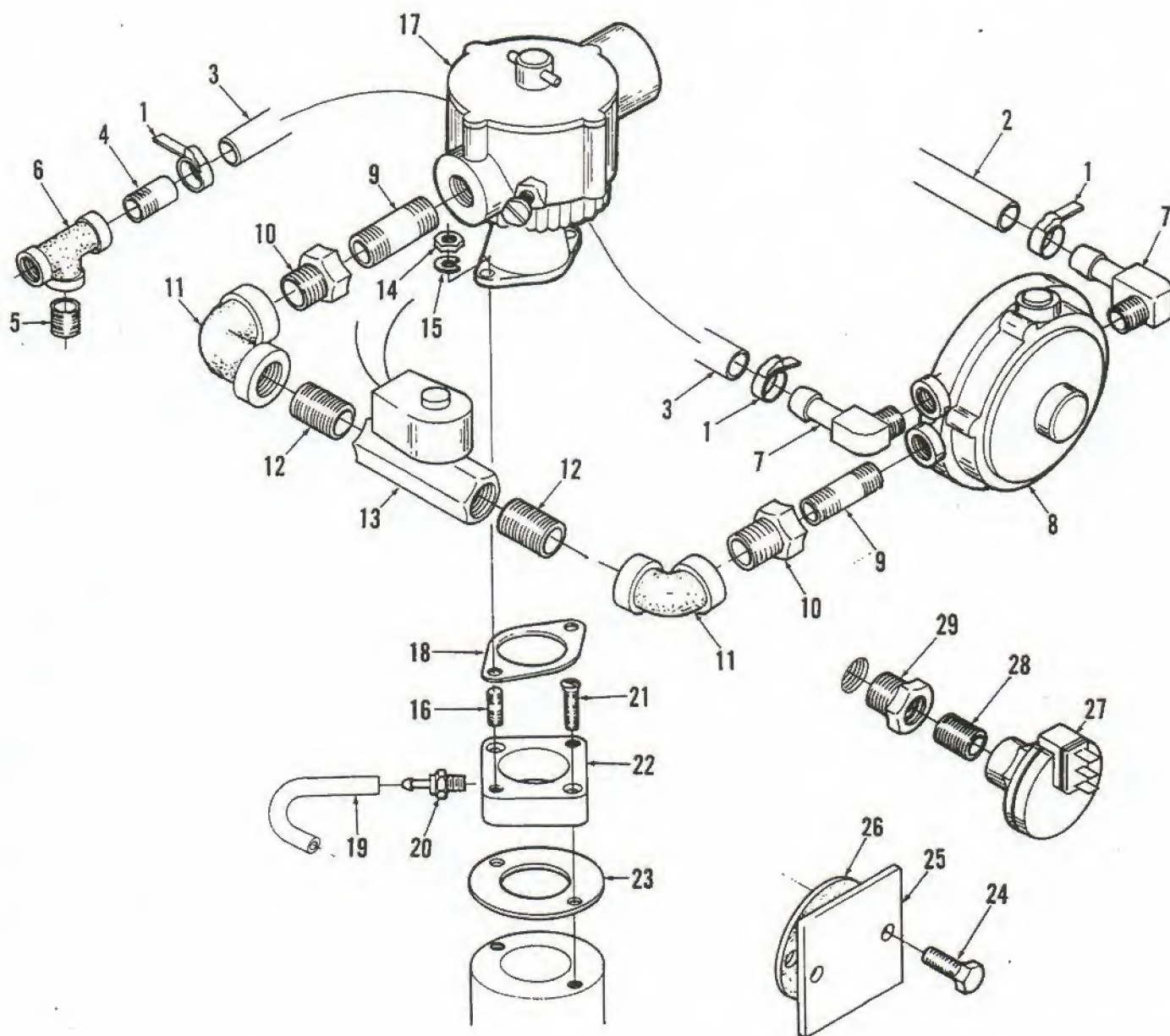


XFS1431

**OPTIONAL
DUAL FUEL SYSTEM
(NAT. GAS & LPG LIQUID)**

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0183	4	Clamp, Hose	18	505-0166	1	Tee, Pipe (3/4" NPT)
2	503-1169	1	Hose, Rubber (5/8" ID x 48" Lg)	19	104-0091	2	Nut, Hex (3/8-24)
3	503-0833	1	Hose, Rubber (5/8" ID x 24" Lg)	20	850-0050	2	Washer, Lock - Spring (3/8")
4	505-0135	1	Nipple, Pipe-Half (3/8" NPT x 1-1/2" Lg)	21	520-0311	2	Stud (3/8-24 x 3/8-16 x 1-5/8" Lg)
5	505-0101	1	Nipple, Pipe-Close (3/8" NPT x 1" Lg)	22	148-0792	1	Carburetor, Gas (Vapor)
6	505-0060	1	Tee, Pipe (3/8" NPT)	23	154-0133	1	Gasket
7	502-0587	2	Adapter - Hose To Pipe, 90 DEG (3/4" NPT x 5/8" Hose)	24	503-0871	1	Hose, Rubber (5/16" ID x 13-1/2" Lg)
8	148-0737	1	Converter - Regulator, LPG (1/2" NPT)	25	502-0582	1	Adapter, Hose (1/8-27 NPT x 5/16" Hose)
9	505-0100	2	Nipple, Pipe- Close (1/2" NPT x 1" Lg)	26	814-0200	2	Screw, Machine - Flat Head (3/8-16 x 1-1/4")
10	505-0022	1	Bushing, Reducer - Hex (1" NPT x 1/2" NPT)	27	148-0800	1	Adapter - Carburetor to Manifold
11	148-0626	1	Valve, Control - Manual	28	148-0775	1	Gasket
12	505-0129	1	Bushing, Reducer - Hex 1" NPT x 3/4" NPT)	29	148-0367	1	Switch, Control - Vacuum (12 VDC)
13	505-0102	3	Nipple, Pipe - Close (3/4" NPT x 1-3/8" Lg)	30	502-0098	1	Nipple, Pipe - Close (1/8" NPT x 3/4" Lg)
14	505-0132	1	Elbow, Pipe - 90 DEG (3/4" NPT)	31	505-0016	1	Bushing, Reducer - Hex (3/8" NPT x 1/8" NPT)
15	307-0312	1	Valve, Solenoid - 12 VDC (3/4" NPT)	32	148-0809	1	Bracket, Support - Carburetor to Regulator
16	148-0597	1	Regulator, Pressure - Gas (1/2" NPT)	33	821-0017	2	Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2")
17	505-0021	2	Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT)	34	149-0638	1	Cover - Fuel Pump Mtg. Hole
				35	149-0736	1	Gasket

OPTIONAL FUEL SYSTEM (LPG LIQUID)

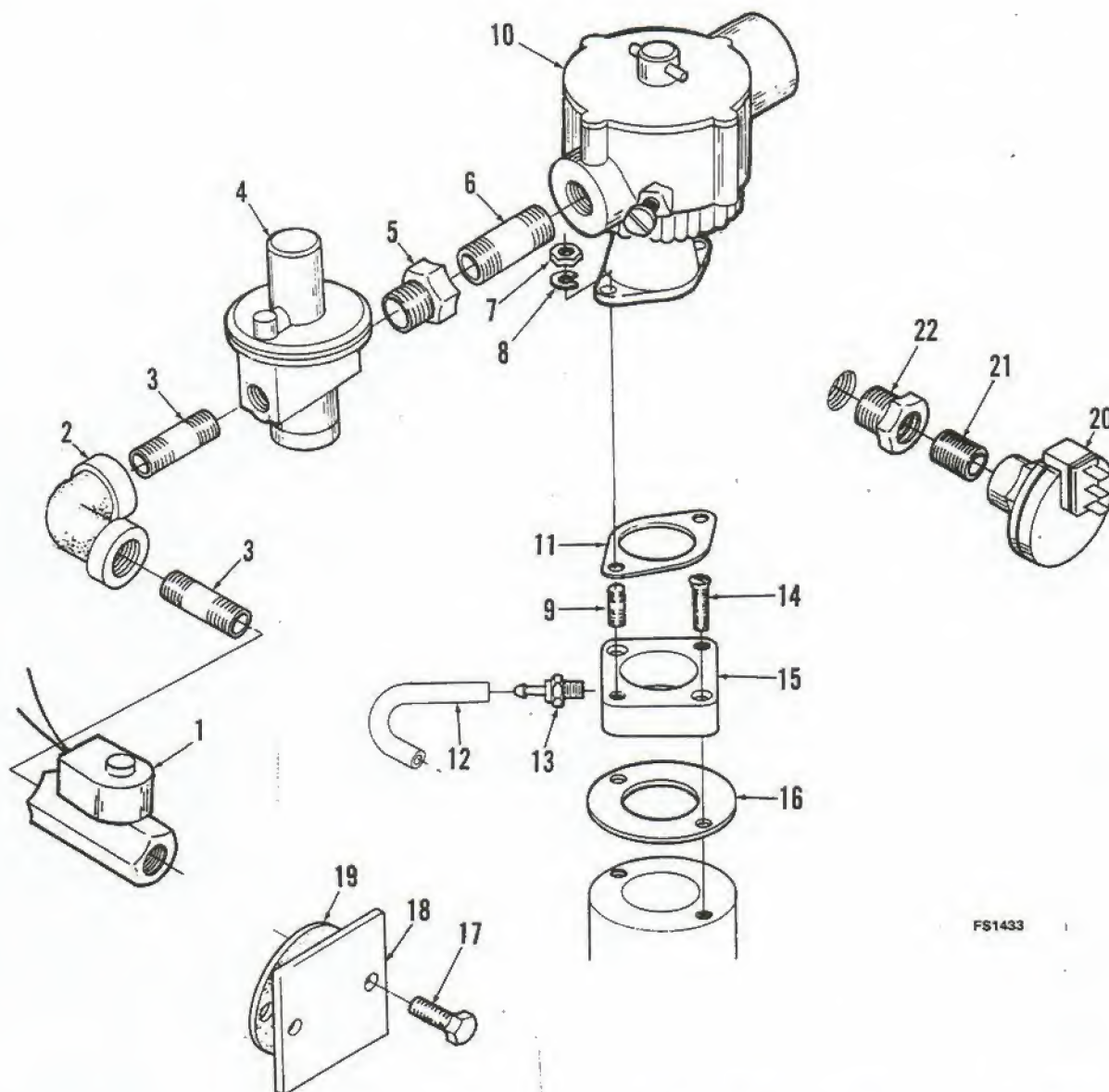


FS1434

OPTIONAL FUEL SYSTEM (LPG LIQUID)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0183	4	Clamp, Hose	15	850-0050	2	Washer, Lock - Spring (3/8")
2	503-1169	1	Hose, Rubber (5/8" ID x 48" Lg)	16	520-0311	2	Stud (3/8-24 x 3/8-16 x 1-5/8" Lg)
3	503-0833	1	Hose, Rubber (5/8" ID x 24" Lg)	17	148-0792	1	Carburetor, Gas (Vapor)
4	505-0135	1	Nipple, Pipe - Half (3/8" NPT x 1-1/2" Lg)	18	154-0133	1	Gasket
5	505-0101	1	Nipple, Pipe - Close (3/8" NPT x 1" Lg)	19	503-0871	1	Hose, Rubber (5/16" ID x 13-1/2" Lg)
6	505-0060	1	Tee, Pipe (3/8" NPT)	20	502-0582	1	Adapter, Hose (1/8-27 NPT 5/16" Hose)
7	502-0587	2	Adapter - Hose to Pipe, 90 DEG (3/4" NPT x 5/8" Hose)	21	814-0200	2	Screw, Machine - Flat Head (3/8-16 x 1-1/4")
8	148-0737	1	Converter - Regulator, LPG (1/2" NPT)	22	148-0800	1	Adapter - Carburetor to Manifold
9	505-0100	2	Nipple, Pipe - Close (1/2" NPT x 1" Lg)	23	148-0775	1	Gasket
10	505-0021	2	Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT)	24	821-0017	2	Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2")
11	505-0132	2	Elbow, Pipe - 90 DEG (3/4" NPT)	25	149-0638	1	Cover - Fuel Pump Mtg. Hole
12	505-0102	2	Nipple, Pipe - Close (3/4" NPT x 1-3/8" Lg)	26	149-0736	1	Gasket
13	307-0312	1	Valve, Solenoid - 12 VDC (3/4" NPT)	27	148-0367	1	Switch, Control - Vacuum (12 VDC)
14	104-0091	2	Nut, Hex (3/8-24)	28	502-0098	1	Nipple, Pipe - Close (1/8" NPT x 3/4" Lg)
				29	505-0016	1	Bushing, Reducer - Hex (3/8" NPT 1/8" NPT)

OPTIONAL FUEL SYSTEM (LPG VAPOR)

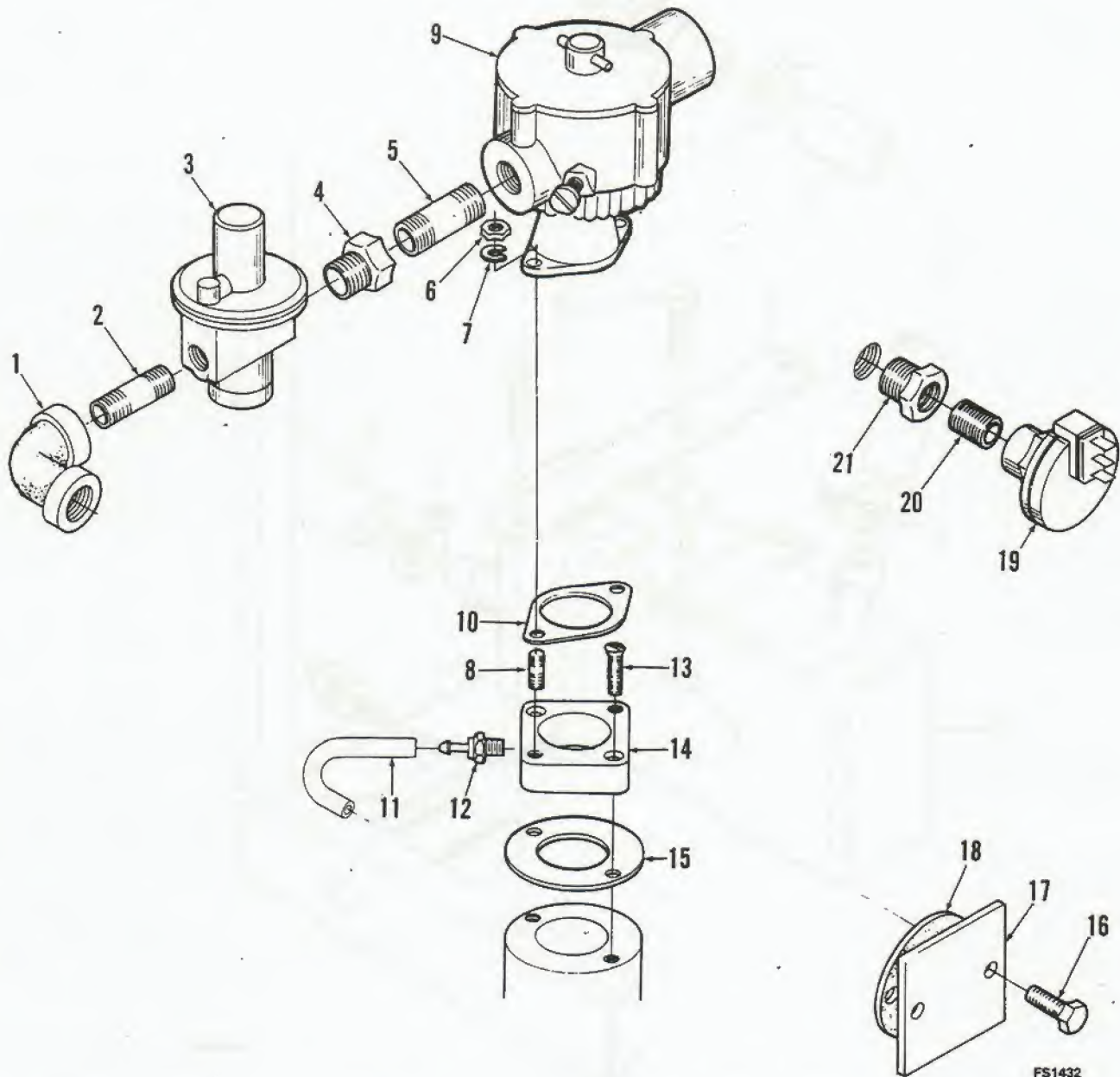


FS1433

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	307-0312	1	Valve, Solenoid - 12 VDC (3/4" NPT)
2	505-0132	1	Elbow, Pipe - 90 DEG (3/4" NPT)
3	505-0102	2	Nipple, Pipe - Close (3/4" NPT x 1-3/8" Lg)
4	148-0637	1	Regulator, Pressure - Gas (3/4" NPT)
5	505-0021	1	Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT)
6	505-0100	1	Nipple, Pipe - Close (1/2" NPT x 1-1/8" Lg)
7	104-0091	2	Nut, Hex (3/8-24)
8	850-0050	2	Washer, Lock - Spring (3/8")
9	520-0311	2	Stud (3/8-24 x 3/8-16 x 1-5/8" Lg)
10	148-0792	1	Carburetor, Gas (Vapor)
11	154-0133	1	Gasket
12	503-0871	1	Hose, Rubber (5/16" ID x 13-1/2" Lg)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
13	502-0582	1	Adapter, Hose (1/8-27 NPT x 5/16" Hose)
14	814-0200	2	Screw, Machine - Flat Head (3/8-16 x 1-1/4")
15	148-0800	1	Adapter - Carburetor to Manifold
16	148-0775	1	Gasket
17	821-0017	2	Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2")
18	149-0638	1	Cover - Fuel Pump Mtg. Hose
19	149-0736	1	Gasket
20	148-0367	1	Switch, Control - Vacuum (12 VDC)
21	502-0098	1	Nipple, Pipe - Close (1/8" NPT x 3/4" Lg)
22	505-0016	1	Bushing, Reducer - Hex (3/8" NPT x 1/8" NPT)

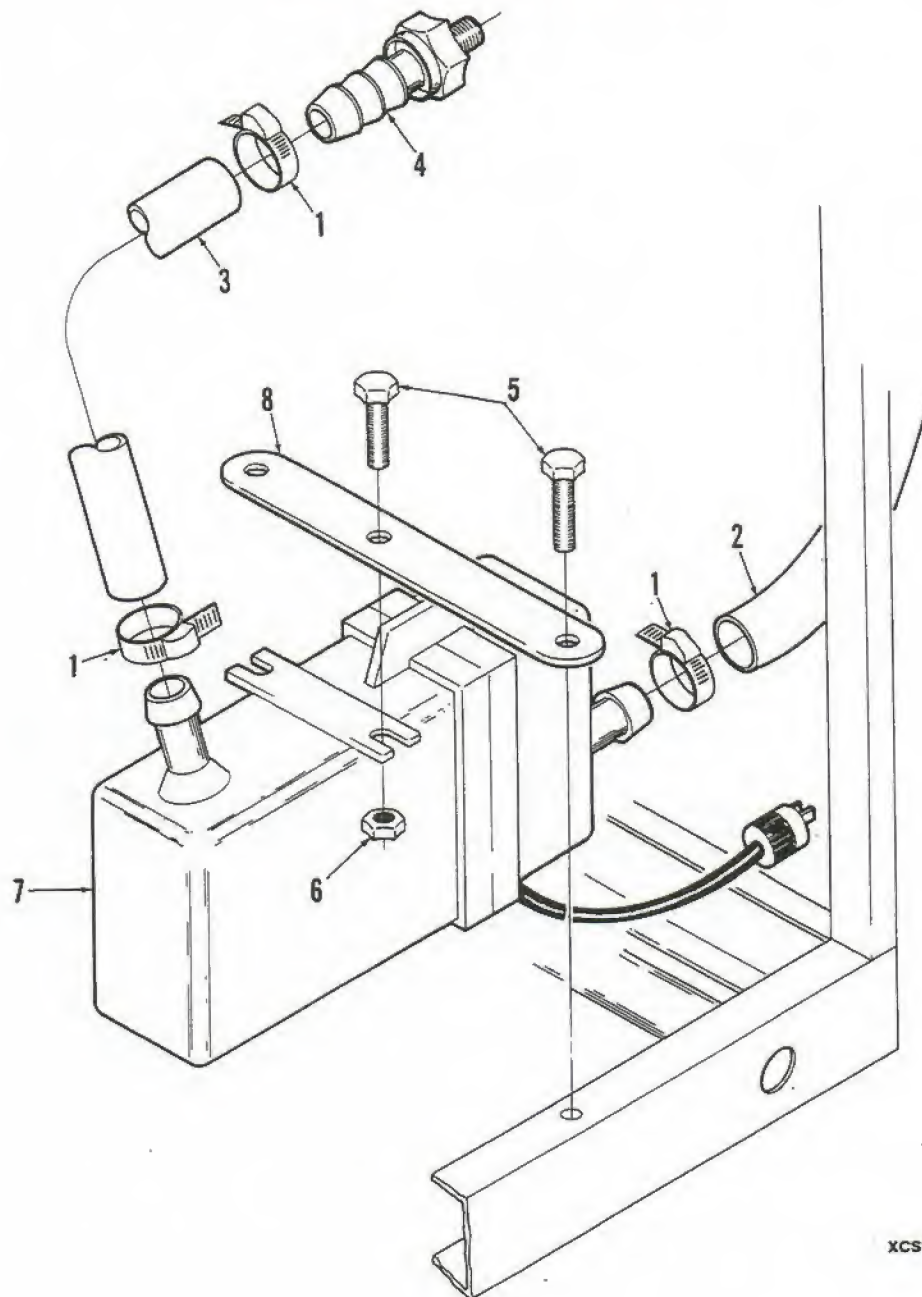
OPTIONAL FUEL SYSTEM (NAT. GAS)



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	505-0132	1	Elbow, Pipe - 90 DEG (3/4" NPT)
2	505-0102	1	Nipple, Pipe - Close (3/4" NPT x 1-3/8" Lg)
3	148-0597	1	Regulator, Pressure - Gas (3/4" NPT)
4	505-0021	1	Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT)
5	505-0100	1	Nipple, Pipe - Close (1/2" NPT x 1-1/8" Lg)
6	104-0091	2	Nut, Hex (3/8-24)
7	850-0050	2	Washer, Lock - Spring (3/8")
8	520-0311	2	Stud (3/8-24 x 3/8-16 x 1-5/8" Lg)
9	148-0792	1	Carburetor, Gas (Vapor)
10	154-0133	1	Gasket
11	503-0871	1	Hose, Rubber (5/16" ID x 13-1/2" Lg)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
12	502-0582	1	Adapter, Hose (1/8-27 NPT x 5/16" Hose)
13	814-0200	2	Screw, Machine - Flat Head (3/8-16 x 1-1/4")
14	148-0800	1	Adapter - Carburetor to Manifold
15	148-0775	1	Gasket
16	821-0017	2	Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2")
17	149-0638	1	Cover - Fuel Pump Mtg. Hole
18	149-0736	1	Gasket
19	148-0367	1	Switch, Control - Vacuum (12 VDC)
20	502-0098	1	Nipple, Pipe - Close (1/8" NPT x 3/4" Lg)
21	505-0016	1	Bushing, Reducer - Hex (3/8" NPT x 1/8" NPT)

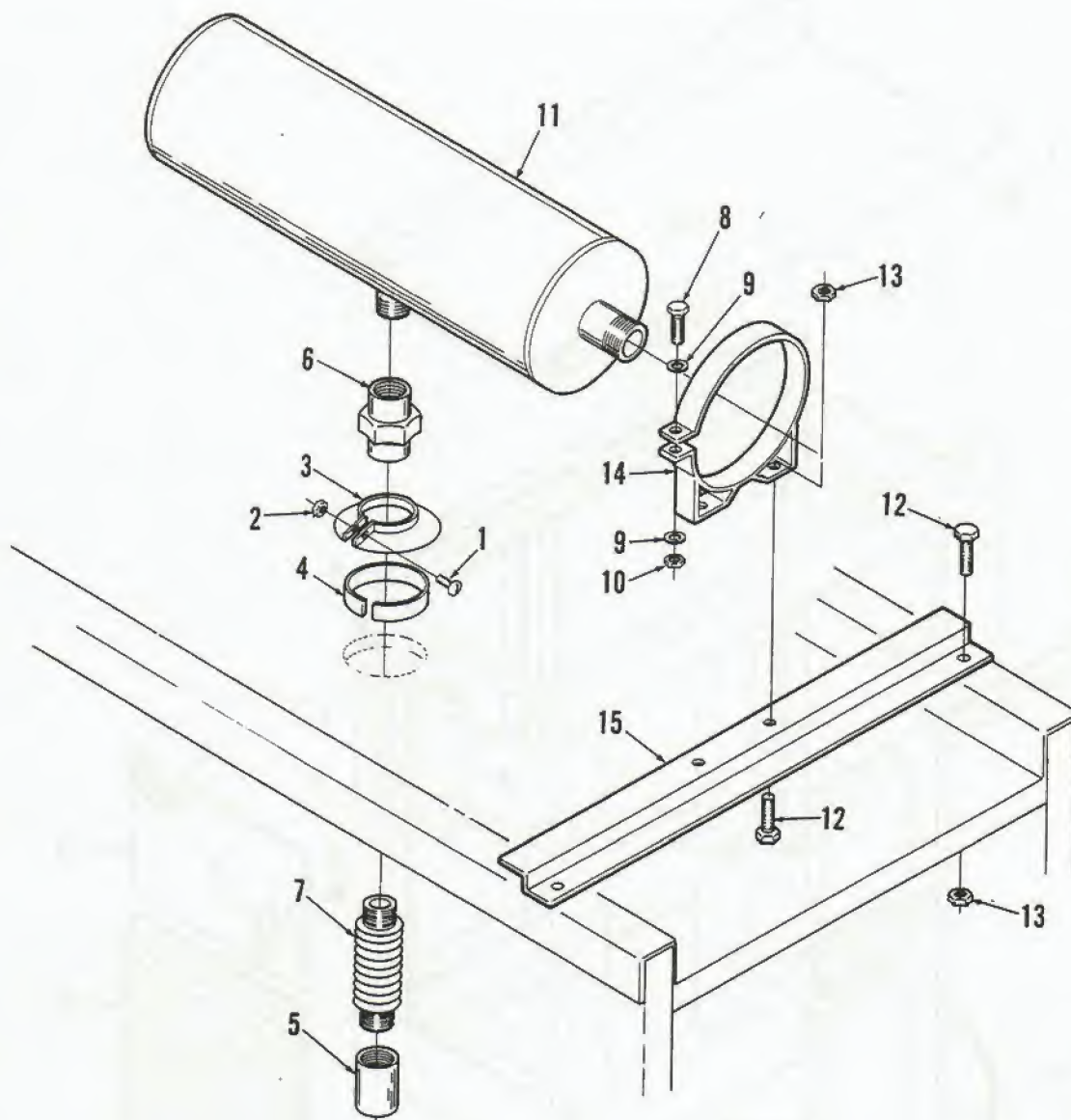
OPTIONAL ENGINE COOLANT HEATER



XCS1199

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0183	4	Clamp, Hose
2	503-1168	1	Hose, Rubber (5/8" ID x 36" Lg)
3	503-0833	1	Hose, Rubber (5/8" ID x 24" Lg)
4	502-0163	1	Adapter, Pipe to Hose (1/4" NPT x 5/8" Hose)
5	821-0011	3	Screw, Self-locking - Hex Washer Head (1/4-20 x 7/8")
6	870-0212	3	Nut, Self-locking - Hex Washer Head (1/4-20)
7	HEATER, ELECTRICAL - ENGINE COOLANT (Includes Mtg. Bracket) - (Select As Applicable to Match Voltage)		
	333-0163	1	1000 Watt, 115 VAC, 1 Phase
	333-0175	1	1000 Watt, 230 VAC, 1 Phase
8	130-1191	1	Bracket, Mounting

OPTIONAL EXHAUST SYSTEM (HOUSED SETS)

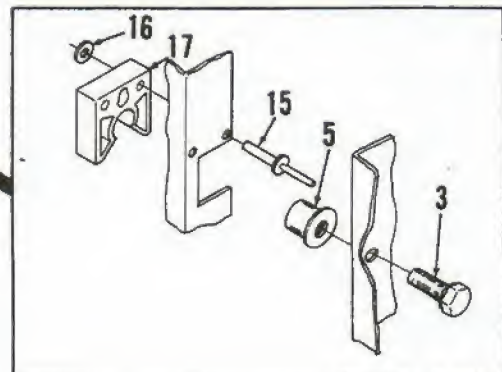
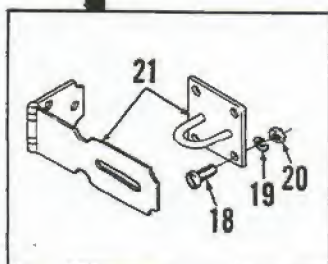
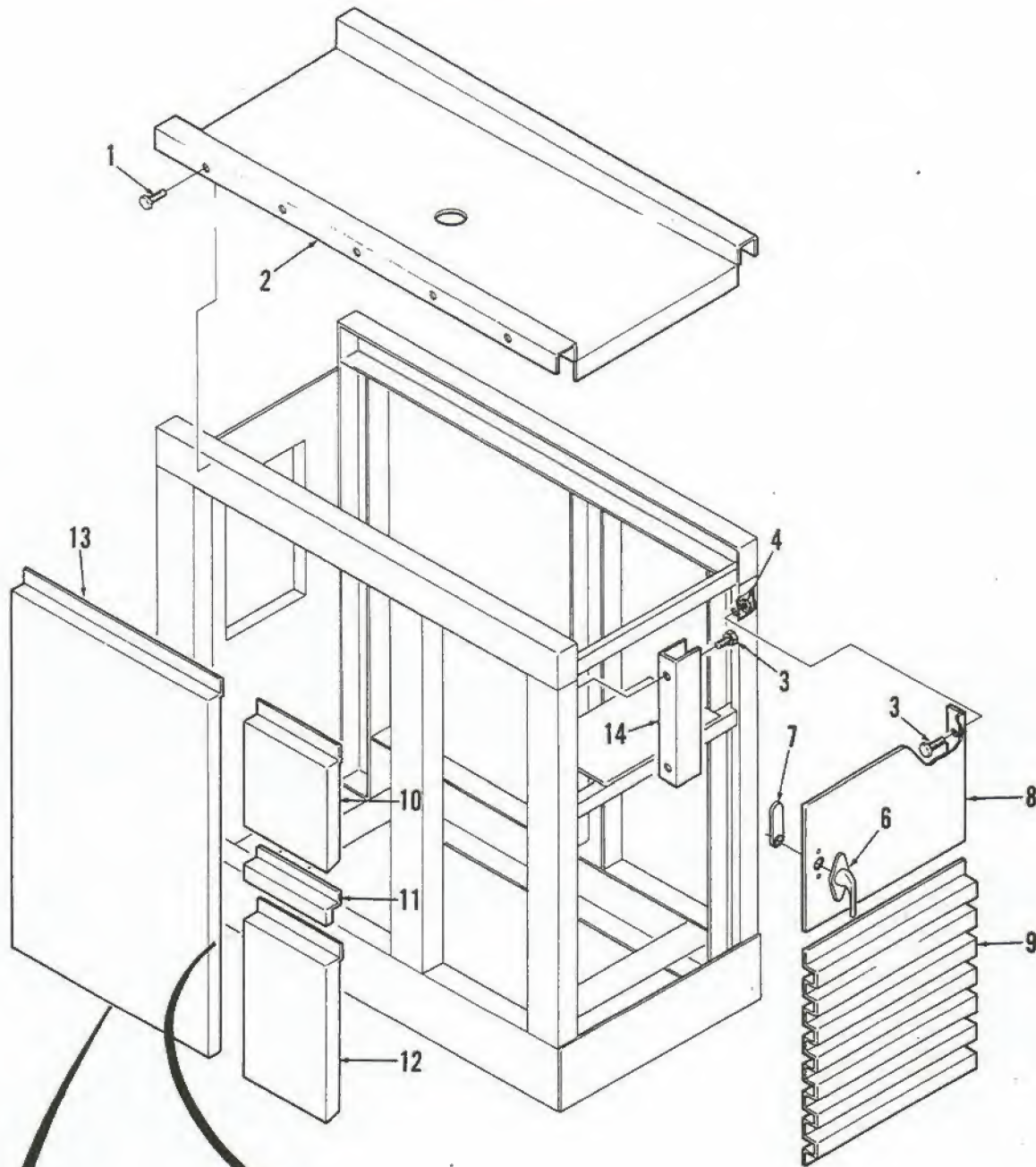


XEXS1081

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	813-0105	2	Screw, Machine - Round Head (#10-32 x 1")
2	870-0188	2	Nut, Self-locking, Hex (#10-32)
3	155-1420	1	Shield, Rain
4	895-0157	1	Asbestos Strip (2" x 1/16" Thk x 8-1/2" Lg)
5	505-0203	1	Coupling, Pipe (2" NPT)
6	505-0454	1	Union, Pipe (2" NPT)
7	155-1590	1	Tube, Exhaust - Flexible (2" NPT x 16" Lg)
8	SCREW CAP - HEX (Select as Required)		
	800-0035	3	5/16-18 x 2-1/2"
	800-0036	3	5/16-18 x 2-3/4"
	800-0037	3	5/16-18 x 3"
9	526-0113	6	Washer, Flat (11/32" ID x 1" OD x 3/32" Thk)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
10	870-0257	3	Nut, Self-locking, Hex Washer Head (5/16-18)
11	MUFFLER, EXHAUST (Select as Applicable)		
	155-0988	1	Industrial (10" OD x 43" Lg)
	155-1512	1	Industrial, SST (10" OD x 43" Lg)
	155-1617	1	Critical, SST (12" OD x 44" Lg)
12	821-0029	8	Screw, Self-locking - Hex Washer Head (3/8-16 x 3/4")
13	870-0281	8	Nut, Self-locking - Hex Washer Head (3/8-16)
14	BAND, MOUNTING (Select as Required)		
	140-0649	2	10" ID
	140-0752	2	12" ID
15	155-1601	2	Brace, Support - Muffler

OPTIONAL SET HOUSING



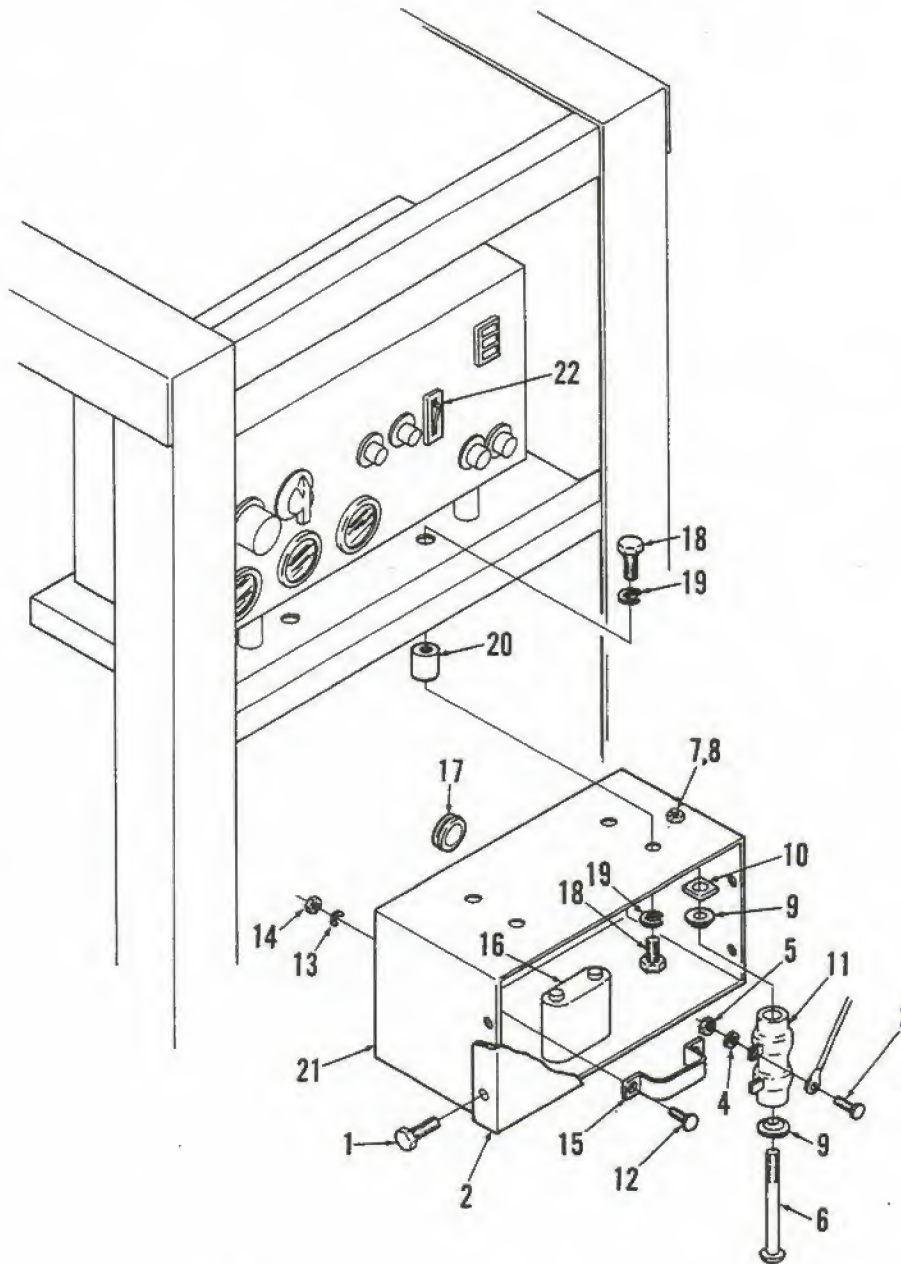
M1401

D10

OPTIONAL SET HOUSING

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	821-0010	10	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")	10	405-2462	2	Door, Access - Control
2	405-2483	1	Panel, Top	11	403-1350	2	Channel, Support - Control
3	821-0010	40	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")	12	405-2460	2	Door, Access - Generator
4	870-0212	12	Nut, Self-locking - Hex Washer Head (1/4-20)	13	405-2461	2	Door, Access - Engine
5	870-0250	28	Nut, Weld - Door Mounting (1/4-20)	14	405-2476	1	Stop, Door
6	405-0157	1	Handle, Lock	15	818-0150	56	Rivet, Drive Pin
7	406-0089	1	Catch	16	526-0003	56	Washer, Flat (11/64" ID x 3/8" OD x 1/32" Thk)
8	405-2475	1	Door, Rear (Excludes Handle & Catch)	17	405-1872	28	Clip, Door - Plastic
9	405-2472	1	Grill, Air - Generator Inlet	18	814-0079	49	Screw, Machine - Flat Head (#8-32 x 1/2")
				19	850-0025	9	Washer, Lock - Spring (#8)
				20	860-0008	49	Nut, Hex (#8-32)
				21	406-0249	7	Hasp, Set - Optional

OPTIONAL VOLTAGE REGULATOR FILTER

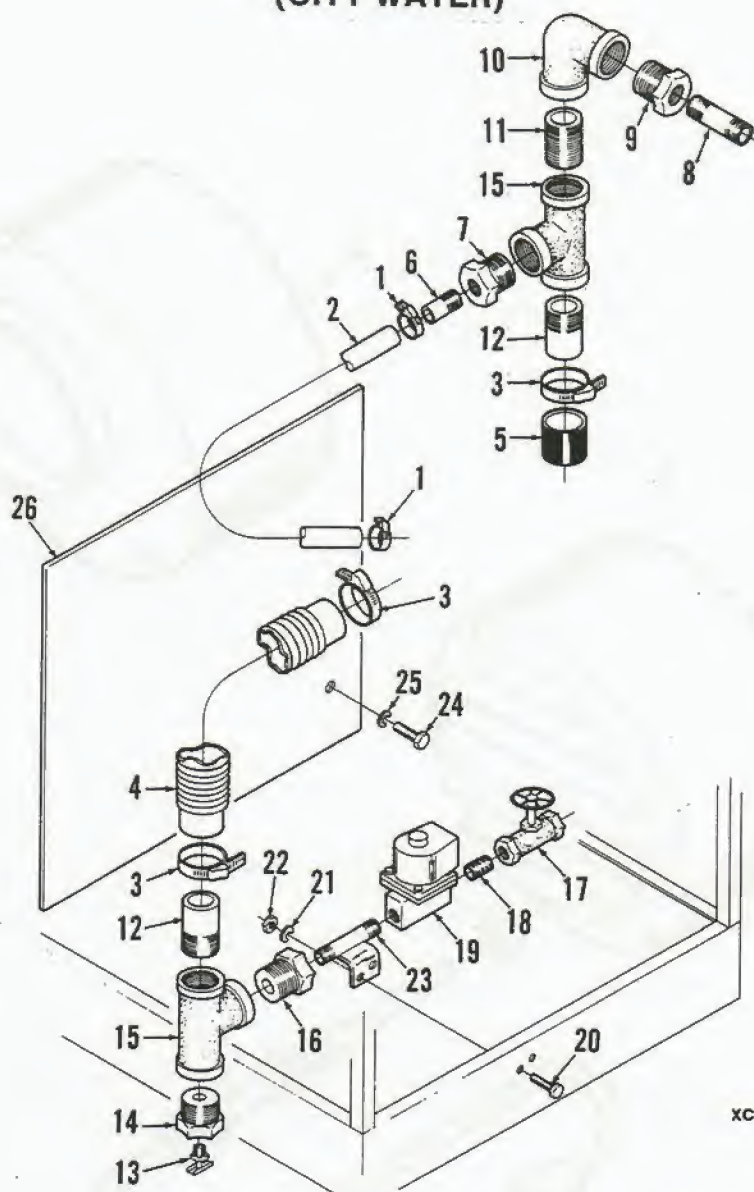


XES1330

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	821-0010	8	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")
2	301-5468	1	Cover, Filter
3	815-0001	4	Screw, Machine - Binder Head (#6-32 x 1/4")
4	853-0003	4	Washer, Lock - ET (#6)
5	860-0006	4	Nut, Hex (#6-32)
6	812-0165	2	Screw, Machine - Round Head (1/4-20 x 4-1/2")
7	862-0001	2	Nut, Hex (1/4-20)
8	850-0040	2	Washer, Lock - Spring (1/4")
9	304-0427	4	Washer, Centering (1/4")
10	304-0292	2	Insulator
11	304-0026	2	Resistor, Fixed, Wire Wound (2-Ohm, 100 Watt)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
12	812-0061	6	Screw, Machine - Round Head (#6-32 x 3/8")
13	850-0020	6	Washer, Lock - Spring (#6)
14	860-0006	6	Nut, Hex (#6-32)
15	312-0189	2	Bracket, Mounting - Capacitor
16	312-0188	1	Capacitor, Fixed - 15 MFD, 440 VAC
17	508-0001	1	Grommet
18	800-0045	8	Screw, Cap - Hex Head (5/16-18 x 3/8")
19	850-0045	8	Washer, Lock - Spring (5/16")
20	402-0070	4	Mount, Vibration
21	301-5467	1	Box
22	320-0061	1	Circuit Breaker (5 Amp, 120 VAC)

OPTIONAL COOLING SYSTEM (CITY WATER)

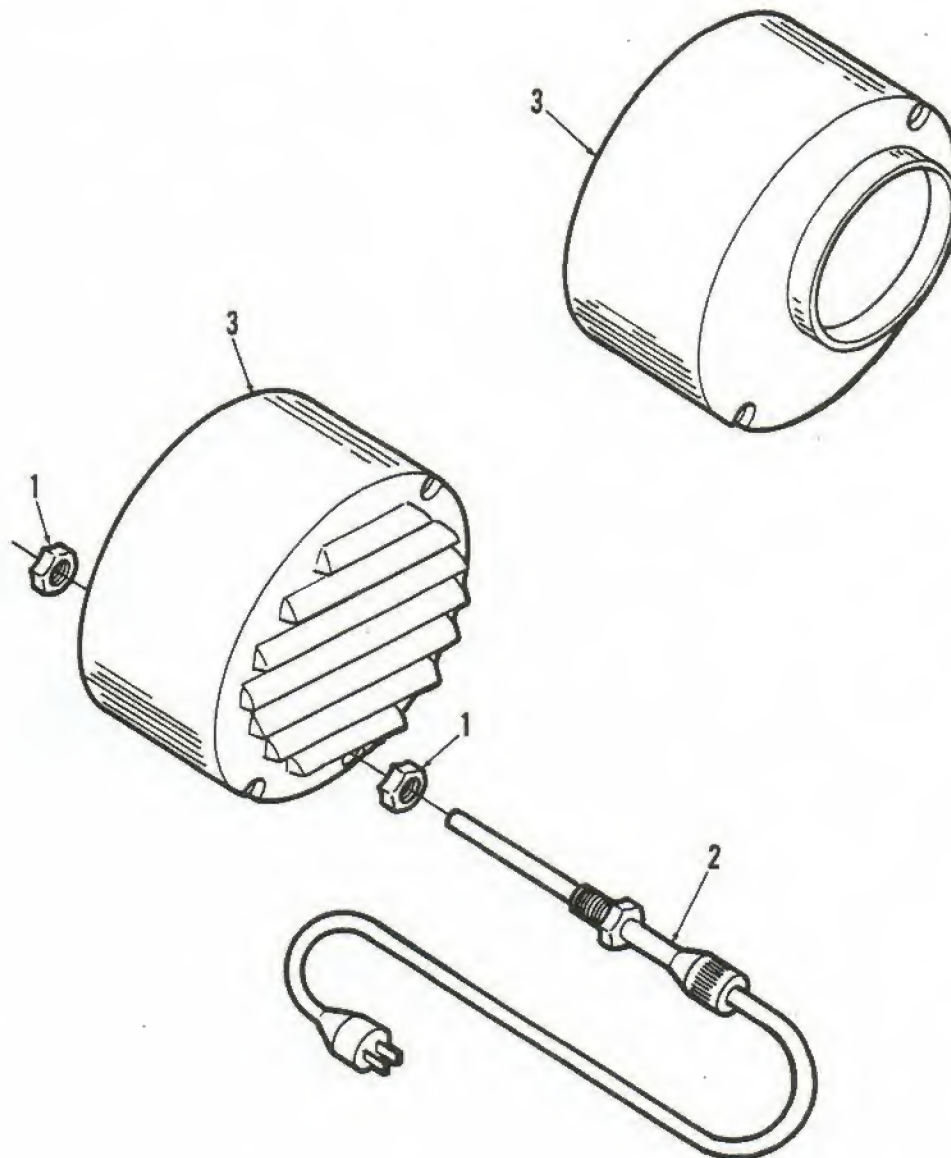


XCS1201

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503-0183	2	Clamp, Hose
2	503-0833	1	Hose, Rubber (5/8" ID x 24" Lg)
3	503-0429	4	Clamp, Hose
4	503-0869	1	Hose, Rubber (1-1/2" ID x 20" Lg)
5	503-1027	1	Hose, Rubber (1-1/2" ID x 3" Lg)
6	505-0135	1	Nipple, Pipe - Half (3/8" NPT x 1-1/2" Lg)
7	505-0128	1	Bushing, Reducer - Hex (1-1/4" NPT x 3/8" NPT)
8	505-0324	1	Nipple, Pipe - Half (3/4" NPT x 2" Lg)
9	505-0297	1	Bushing, Reducer - Hex (1-1/4" NPT x 3/4" NPT)
10	505-0042	1	Elbow, Pipe - 90 DEG (1-1/4" NPT)
11	505-0177	1	Nipple, Pipe - Close (1-1/4" NPT x 1-1/2" Lg)
12	505-0384	2	Nipple, Pipe - Half (1-1/4" NPT x 2" Lg)
13	504-0003	1	Cock, Drain (1/4" NPT)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
14	505-0766	1	Bushing, Reducer - Hex (1-1/4" NPT x 1/4" NPT)
15	505-0249	2	Tee, Pipe (1-1/4" NPT)
16	505-0127	1	Bushing, Reducer - Hex (1-1/4" NPT x 1/2" NPT)
17	505-0019	1	Valve, Globe (1/2" NPT)
18	505-0100	1	Nipple, Pipe - Close (1/2" NPT x 1-1/8" Lg)
19	307-0833	1	Valve, Solenoid - 12 VDC (1/2" NPT)
20	800-0007	2	Screw, Cap - Hex Head (1/4-20 x 2")
21	850-0040	2	Washer, Lock - Spring (1/4")
22	862-0001	2	Nut, Hex (1/4-20)
23	110-0526	1	Nipple and Bracket Assembly (1/2" NPT)
24	800-0028	1	Screw, Cap - Hex Head (5/16-18 x 1")
25	850-0045	1	Washer, Lock - Spring (5/16")
26	130-1696	1	Guard

OPTIONAL GENERATOR HEATER



M1402

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	331-0041	2	Nut, Hex - Special
2	333-0157	1	Heater, Electrical
3	COVER, ENDBELL		
	234-0542	1	Sets Without Overspeed Switch
	234-0543	1	Sets With Overspeed Switch
	234-0541	1	Sets With Duct to Cover



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